PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 113, No. 12 Thursday, September 18, 1941 Price Ten Cents

Consider Reconstruction of Wausau Mill

Damage Caused By Labor Day Flood of More Than $100,000 Destroys Generator Plant and Makes New Power Hook-Up Necessary —Sportsmen Protest New Consolidated Dam—Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 15, 1941—Reconstruction of the paper mill of the Wausau Paper Mills Company, Brokaw, Wis., was considered by the board of directors at a special meeting Friday, September 5, but C. C. Collins, president, declared that plans were still too indefinite for announcement.

It is estimated that the damage caused by a flood during the Labor Day weekend will cost more than $100,000 to repair. The company's dam was carried out by the flood, along with an earthen dike, resulting in the wrecking of the generator plant, and partial destruction of the finishing rooms of the paper mill. The loss was all the more serious to the company because of a previous catastrophe in which its power plant caved in and wrecked its modern dam. Since then the company had depended on an old dam, formerly abandoned, for power.

With the generator plant destroyed, the company also was obliged to suspend operations in its pulp mill, which escaped flood damage. In order to operate, it will be necessary to arrange for a new power hook-up with the company's steam plant and commercial lines. It is expected that this will be accomplished within a week so pulp production can be resumed.

C. R. Meyer & Sons Company, contractors of Oshkosh, Wis., presented an appraisal of the damage and cost of replacement at the directors' meeting.

Traces History of Ahdawagam Co.

The Ahdawagam Paper Products Company's fifty years of history was traced last week by Frank Walsh, general manager, in an address before the Kiwanis Club at Wisconsin Rapids, Wis. He told of the organization of the Oberbeck Brothers Manufacturing Company on August 18, 1891, by John Daly, Henry Sampson and Jere Witter, of Wisconsin Rapids, and Ernest and Fred Oberbeck of Chicago, Ill.

The company engaged in the manufacture of furniture after the frame building was completed in 1892, and continued in operation as Oberbeck Brothers until 1913 when it was reorganized as the Ahdawagam Furniture Company, under management of George Labour. In 1918 it became the Ahdawagam Paper Products Company.

In 1930 the folding carton department was added, and two years ago a new addition was built. The present pay roll includes about 120 employees, Mr. Walsh said. One of the employees in the original plant, Otto Bein, has been with the company since 1892.

Production has been reduced to some extent because of shortage of materials necessitated by the defense program, Mr. Walsh said.

Authorized To Collect Water Tolls

Authorization has been granted to the Chippewa and Flambeau Improvement Company by the Wisconsin State Public Service Commission to impose toll of $108,000 against water power operators along the Chippewa and Flambeau rivers for service during the first six months of the year. The Improvement company was authorized in 1911 to construct a series of reservoirs for power purposes. The tolls include: Flambeau Paper Company, Park Falls, $11,755; Lake Superior District Power Company, Ashland plant, $9,736; Ladysmith plant, $2,424; Cornell Wood Products Company, Cornell, $4,397; Northern States Power Company, $67,260; Eau Claire Dells Improvement Company, Eau Claire, $12,289.

Sportsmen Protest Consolidated Co.'s Dam

Sportsmen have protested to the Wisconsin State Conservation Commission that the proposed new power dam at Knowlton on the Wisconsin River, Marathon County, Wis., will damage fishing in the river. The commission at Madison, Wis., replied that it is powerless to act.

The $1,500,000 dam was proposed by George W. Mead, president of the Consolidated Water Power and Paper Company.

It is contended that pollution will be aggravated by the new dam. Many mills from Rhinelander, Wis., to Wisconsin Rapids deposit their industrial waste in the stream, and the sportsmen declare that every dam creates another pool in which waste can stagnate and decay, killing many fish.

Canadian Newsprint Industry Starts Survey

Inquiry Would Determine How Adequately Present Equipment Would Meet Demand For Utmost Productive Capacity—Six Mills Making New Sulphite Corrugating Paper—Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 15, 1941—Canadian newsprint industry is making a survey of facilties to determine just what the present equipment could do if it were pushed to the limits of its productive capacity. Ordinarily, the industry is supposed to have surplus capacity of approximately a million tons annually. Right now, with Canada the principal source of newsprint supplies for the democratic world, the surplus capacity may not be quite so high, but there are no definite figures on it.

The United States defense and Lease-Lend program is working to Canada's benefit and the acute shortage of certain paper products across the line is opening up a new market for Canadian newsprint facilities. The surplus capacity of Canadian newsprint mills is being fitted into the United States requirements through arrangements that have been made to use marginal facilities to produce specialty papers as a substitute for other types already in use.

Mill Now Making New Corrugating Grade

Five or six major Canadian newsprint companies are now manufacturing for the United States market a new product known as nine-point sulphite corrugating paper. They are making about five to six thousand tons a week and have contracts extending to the end of the year.

The new paper is being sold at about $60 a ton, U. S. funds, delivered in New York, plus customs and other charges. It is being made on standard newsprint machines in much the same way as newsprint paper, but has a much higher sulphite pulp content, and is stronger and heavier. While the regular newsprint sheet contains about 12% sulphite and 88% groundwood pulp, the special sheet being made for the American market runs as high as a third in sulphite pulp. It is artificially colored to give it the appearance of kraft and is being used as a substitute for that product. It is processed in the regular way by the boxboard manufacturers.

Canadian newsprint surplus capacity is not so easy to determine because some mills have a surplus of sulphite pulp while others are so balanced as to have little or no surplus sulphite pulp.

New Grade Uses More Sulphite Pulp

The new corrugated paper utilizes a much higher percentage of sulphite pulp than newsprint, so that its manufacture is particularly advantageous to those mills having a surplus capacity in that respect.

A ton of the nine-point corrugating paper is equivalent to about 2½ tons of newsprint in the quantity of sulphite pulp capacity utilized, and at the same time utilizes a smaller proportion of groundwood pulp equipment than newsprint.

Canadian mills are producing from 250,000 to 300,000 tons annually of the new paper, thus absorbing about 750,000 tons of newsprint capacity, according to estimates made by responsible operators.

It is generally supposed that the Canadian newsprint industry is able to produce around 4,350,000 tons of newsprint annually, but this tonnage would be considerably less if the present capacity were diverted to an appreciable extent to the manufacture of more diversified products.

The paper situation in the United States is reflected in two other types of paper being made in Canada for the American market on a smaller scale. These products are 40-lb. Manila news sheets and standard news specially cut, to replace kraft paper in some types of bags. The Manila news also contains a high percentage of sulphite pulp and is used as a substitute for kraft wrappers.

Urged To Place Long-Term Contracts

Presumably because of this new development in the Canadian newsprint industry, publishers are being urged to place long-term contracts with the mills to protect their interests.

However, it would seem that with a surplus capacity of a million tons annually as has been manifest for some time past, Canadian newsprint mills should be in a position to meet all demands, even if the demand for the nine-point corrugating paper, Manila sheets and other substitutes for kraft should develop extensively. It is not, however, beyond the realms of possibility, that the combined weight of increased domestic demand, the new uses for the newsprint equipment and the responsibility of supplying the democratic world with newsprint, might make it necessary to work out some system of priorities.

Newsprint Production Lower

Production of newsprint in Canada during August 1941 amounted to 293,054 tons and shipments to 296,985 tons according to the News Print Service Bureau. Production in the United States was 83,592 tons and shipments 80,756 tons, making a total United States and Canadian newsprint production of 376,646 tons and shipments of 377,741 tons. During August, 30,853 tons of newsprint were made in Newfoundland, so that the total North American production for the month amounted to 407,499 tons. Total production in August 1940 was 434,964 tons.

The Canadian mills produced 83,612 tons less in the first eight months of 1941 than in the first eight months of 1940, which was a decrease of three and six tenths per cent. The output in the United States was 3,704 tons or five tenths of one per cent more than in the first eight months of 1940; in Newfoundland production was 2,613 tons or one and one tenth per cent more, making a net decrease of 77,295 tons, or two and four tenths per cent less than in the first eight months of 1940.

Stocks of newsprint paper at the end of August were 155,214 tons at Canadian mills and 13,459 tons at United States mills, making a combined total of 168,673 tons compared with 169,768 tons on July 31, 1941, and 178,935 tons at the end of August 1940.

Broader Paper Demand Reported in Midwest

Heavier Government Buying and Higher Consumer Demand Creating "Pinch" In Many Lines—Fall Meeting of N.P.T.A. Is Major Event This Week — Drive For Waste Paper Gains — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., September 15, 1941—Still slowed up by results of excess rainfall in Wisconsin, hampered by inability to get anything like the goods needed to satisfy demand and faced with tremendously increased overhead costs, the Chicago paper market finds itself in no less a tight spot than a week ago. Government buying is running a bit higher than even was expected and consumer demand has broadened out with the advent of bidders for paper for use in merchandising campaigns. All markets if, as one paper executive puts it, "they can correctly be called markets" are very firm.

The pinch in sulphites and krafts continues to be the feature of the extraordinary situation but all grades of paper are equally included in merchandising problems revolving around the necessity for making profits through higher prices, if permitted, rather than through volume, which latter procedure seems virtually impossible. Unfilled orders in the paper board industry here are said to be at the highest level on record, agreeing with national reports which show that the backlog is at over 435,000 tons compared to 383,000 tons a month ago and 160,541 tons a year ago.

Drive for More Waste Paper Gains

With offices at 55 East Washington street, plenty of publicity, including radio programs and a close contact with the charity organizations of the city, the Waste Paper Consuming Industries is "digging in" for an indefinite stay in its efforts to provide a greater supply of waste paper for defense use. The Conservation unit activity under OPM direction is headed here by W. A. Rogers and reports indicate that already a rather remarkable amount of tonnage has been picked up even though the activity is little over a few days old. The Boy Scouts of Chicago are seeking out magazines, waste paper and wrapping paper of all kinds while the charity organizations are likewise searching the garrets and cellars of Chicago and its suburbs to get the financial benefit of the paper turned over to the headquarters.

It is reported that arrangements have been made with the waste paper dealers of the city to make pick-ups wherever stocks have been accumulated and whenever and wherever private individuals call in as to its availability. The City of Chicago has lessened its restrictions with respect to locale operations of waste paper dealers, according to reports, and the reported crisis caused by a shortage of waste paper is expected to be materially lightened by the combined civic and business effort.

Fall Meeting of N.P.T.A. Opens

All arrangements are completed for the Fall Meeting of the National Paper Trade Association which opens on Monday, September 15, at the Hotel Stevens in Chicago. Running through the middle of the week, the big event for the paper industry will really get a head start on Sunday as the staff of the N.P.T.A. meets with elected officers and gears the proceedings down to the last minute detail. Only parts of the program have been seen in Chicago but these semi-official announcements show that defense will be the big subject for discussion and officers of the OPM as well as members of the industry are set to analyze what the industry intends to do about meeting government requirements as well as the demand for paper from private sources which is increasing daily.

The Paper and Twine Club, the Chicago Paper Association—latest affiliate of the N.P.T.A.—the Salesmens Association of the Paper Industry and other groups working closely with the parent group all have special programs outlined to discuss their own problems and correlate them with the national picture and the national objective. Exhibitors are already preparing to display the latest of a long series of notable additions and improvements in the many lines which will be "on parade." Important committee meetings, the sessions for the Fine and Wrapping Paper groups, the extremely interesting general combined sessions and the increasingly valuable forum discussions will characterize the three day event.

Government Paper Buying Heavy

The Chicago *Tribune* this week gives two columns over to a discussion of the paper shortage in this country and particularly in this area. Under the heading "Capital Rolls in Sea of Paper But Buys More," Lloyd Norman writes as follows: "With Washington wallowing in a sea of paper, government consumption of all types of paper this year is expected to reach 4 million tons or about 20% of the nation's producing capacity."

"We have to keep our customers on Rations," said one leading Chicago jobber, "because that is the way we are getting supplies from the mills. The trouble is largely the result of the government's heavy purchases. But there is also a form of hysteria buying. Customers who usually bought only a month's supply are now buying ahead for several months and in quantities sometimes twice or three times normal needs. They are afraid they won't be able to get their requirements if they don't stock up now."

"The buying wave was attributed by one paper company official to predictions by Office of Production Management experts that the government will be taking 35% of the paper mills output next year and as much as 50% in 1943. Additional dislocations of the paper production schedules has resulted from difficulty in getting new machinery and replacement parts subject to priorities. The most severe shortages outside of the writing paper field have occurred in wrapping paper and paperboard used in boxes and cartons. The steel industry uses about 45,000 tons of kraft paper a year for interleaving between tin plated or stainless sheets and plates. The record operations of the steel industry have expanded the use of this paper."

Shortage of U. S. Pulpwood Felt in Japan

Cutting Off of Pulp Supplies From United States and Canada Creates Anxiety In Japan—U. S. Supplied 60 Per Cent Last Year — Investors Interested In Paper Stocks — Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 15, 1941—That "considerable concern" has been caused in Japan through the cutting off of supplies of wood pulp from Canada and the United States is the statement made by M. T. Stewart, Acting Commercial Secretary for Canada at Tokio, in a report he has just made to the Department of Trade and Commerce at Ottawa.

The practical elimination of Northern Europe as a source of supply ground pulp, he states, had forced Japan to study conditions of supply in Canada and the United States, and now the conditions that have developed have proved embarrassing. It is estimated, Mr. Stewart says, that in 1940 about 60% of Japan's total imports of pulp came from the United States. Including Canadian supplies, an estimated 80% of the total came from North America.

No estimates concerning Japan's probable requirements of wood pulp during 1941 have appeared in the trade journals, Mr. Stewart observes, but, despite the frequent boast that Japan is nearing self-sufficiency in rayon pulp, it is estimated that 100,000 long tons of rayon pulp at least would be purchased from the United States and Canada if the business could be arranged and financed. Up to May 15 Japanese importers had filed applications for the importation of 32,500 long tons from the two countries, 24,500 from the United States and 8,000 from Canada.

Investors Interested in Paper Stocks

The chief feature of the pulp and paper industry of note here this week is the increasing interest being displayed by investors in the securities of pulp and paper companies, these now occupying the position of favorites in the stock markets. Here are two examples of comment by financial writers in Montreal.

The Montreal Gazette says: "Strength in the 'papers,' which were up as much at 2½ points, was the outstanding feature of yesterday's dealings on the local bond market. One particular feature was the rise in Abitibi 5's or '53 to the highest level since September of 1937, the closing quotation being 77 to 79, which compares with the 62 level at which bonds changed hands on February 18. Good demand was seen in Browns, Consolidated Papers and M. & O.'s. As of the close the 'paper' group average stood at a new high at 68.35, a level more than 15% above that prevailing at the beginning of July and more than 25% above the year's low at February 15. On the past ten weeks Abitibis have risen 6¼, Consolidated Papers 11, Lake St. John 5's 13½ and Brown 5½'s of '46 have gained 14½ points. The 'papers' have obviously provided a much better opportunity for a trading turn than any other group of stocks or bonds."

Leading Stock Show Gains

The Financial Times, of Montreal, says: "In local brokerage circles special attention has been given to the substantial gains recorded in the Wall Street market by International Paper, preferred and common. Interest has centered principally in the common stock, which has made a gain of around 75% during the current year, and most of it has occurred over the last two months. As the operations of the company are largely in Canada brokers figured that the movement in International would help all Canadian paper stocks. Since the beginning of September there have been substantial gains in stocks like Price Brothers, Fraser, and a steady demand for Bathurst "A." Much of the buying has been for interests who are putting away blocks of low-priced issues with a view of possibly enjoying a considerable market appreciation over the next few years. Reports that come from different Canadian paper companies indicate that they are putting themselves in the strongest shape they have enjoyed for a great number of years, and under anything like normal conditions they figure that consideration will have to be given to some distribution on the junior securities, in view of the many years investors have had to wait for any return at all on their investment in an industry, which, it is claimed, should have been paying dividends right along."

College Spirit To Prevail at Green Bay

The spirit of college days will prevail during the two-day gathering at Green Bay, Wis., of the Mill Superintendents Association.

A good, old-fashioned college atmosphere will serve as the background and theme of the two nights of entertainment, October 10 and 11, which will highlight the fall meeting in Green Bay, Wis.

The committee in charge of arrangements has obtained appropriate novelties and wearing apparel, so that all attending the fall meeting can enter into the festivities in a genuine college homecoming manner.

The committee has also announced that they would be glad to handle reservations for any delegates wishing to attend the professional league football game between the Green Bay Packers and the Brooklyn Dodgers in Milwaukee, Wis., on Sunday, October 12.

The fall meeting headquarters will be at the Northland Hotel. Reservations should be sent in at once by contacting either the Northland or Beaumont Hotels, Green Bay, Wis.

American Coating Plants Reopen

[FROM OUR REGULAR CORRESPONDENT]

ELKHART, Ind., September 15, 1941—Most of the employes of the two local plants of the American Coating Mills, Inc., returned to work Friday morning as the result of an agreement between the United Paper Workers and the management which ended a five-day strike. Details of the agreement for a new contract to replace one which expired August 31, were not made public. Conciliation efforts were aided by Harry E. Scheck, Chicago, commissioner of conciliation from the United States labor department, and Arthur C. Viatt, Fort Wayne, federal labor conciliator.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 17, 1941—Government Printing Office has received the following bids for 11,500 pounds of 75% rag, 21 x 32 white ledger paper: Whiting Paper Company, 21.5 cents; Mudge Paper Company, 20.69 cents; Old Dominion Paper Company, 21.48 cents; Barton, Duer & Koch Paper Company, 22.5 cents; R. P. Andrews Paper Company, 18.5 cents; and Baxter Paper Company, 20.75 cents.

For 12,000 sheets of 24 x 36 brown cloth lined paper: Mudge Paper Company, $157.29 per M sheets; Middlesex Products Company, $140.00; Whitaker Paper Company, $156.52; Nashua Gummed and Coated Paper Company, $129.70; R. P. Andrews Paper Company, $162.00; and Cauthorne Paper Company, $157.31.

For 12,000 sheets of 30 x 36 gray pressboard: Bird & Son, Inc., $192.00 per M sheets; Case & Risley Paper Company, $222.00; and Whitaker Paper Company, $222.00 and $206.25.

For 120,000 pounds of 25% rag, white bond paper in 32 in. rolls: Chicago Paper Company, 12.75 cents; Mudge Paper Company, 13.15 cents; and Whitaker Paper Company, 13.8 cents.

For 40,000 sheets of white railroad board and 30,000 sheets same orange: Bradner-Smith Company, $50.95 and $32.155 per M sheets; Stanford Paper Company, $51.00 and $32.18; and R. P. Andrews Paper Company, $51.39 and $32.39.

For 40,000 pounds of 50% rag, white bond paper: R. P. Andrews Paper Company, 14.69 cents; Barton, Duer & Koch Paper Company, 15.15 cents; Cauthorne Paper Company, 15.15 cents; and Whiting Paper Company, 15.5 cents.

For 19,200 pounds of 25% rag, blue bond paper: Mudge Paper Company, 14.25 cents; Old Dominion Paper Company, 13.49 cents; and Whiting Paper Company, 14.25 cents.

For 36,000 pounds of 38 x 48, 100% rag, antique book paper: Cauthorne Paper Company, 21.5 cents; Barton, Duer & Koch Paper Company, 22.5 cents; and Stanford Paper Company, 25.25 cents.

For 10,776 pounds of 36 x 42 buff sulphite index paper: Mudge Paper Company, 8.45 cents; Bradner & Smith Company, 8.66 cents; Graham Paper Company, 9.75 cents; and R. P. Andrews Paper Company, 8.73 cents.

For 88,800 pounds of green and the same amount of yellow, 32½ x 42½ mimeograph paper: Cauthorne Paper Company, 8.2 cents and R. P. Andrews Paper Company, 8 cents.

For 2,000 pounds of vegetable parchment paper for Tympan use in 48 in. rolls: Paterson Parchment Paper Company, 27 cents; R. P. Andrews Paper Company, 26.3 cents; and Mudge Paper Company, 23.65 cents.

For 97,600 pounds of 28 x 34 white sulphite writing paper: Mudge Paper Company, 10.42 cents; Eastern Corp., 7.53 cents; and Paper Corp. of U. S., 9.2 cents.

Government Paper Awards

Marquette Paper Company has been awarded the contract for furnishing the Government Printing Office with 296,000 pounds of 32½ x 42½ white mimeograph paper at 8.36 cents, bids for which were received on August 25. Other paper awards at the Printing Office include the following:

Paper Corp. of U. S. will furnish 76,640 pounds of 34 x 52 white sulphite writing paper at 9.85 cents. Old Dominion Paper Company will furnish 8,808 pounds of 50% rag, 32 x 42 blue bond paper at 15.44 cents and Walker Goulard & Plehn Company will furnish 34,500 pounds of 50% rag, 21 x 32 white ledger paper at 15.7 cents less 2%. Old Dominion Paper Company will furnish 177,500 pounds of 25% rag, 32½ x 42½ mimeograph paper. Paper Corp. of U. S. will furnish 60,000 pounds of white sulphite writing paper in 21 in. rolls at 13.5 cents and Import Paper Company will furnish 9,750 pounds of 21 x 32 blue sulphite manifold paper at 13 cents. Bids for all of these items were received on August 22.

Cauthorne Paper Company will furnish 44,400 pounds of 32½ x 42½ yellow mimeograph paper at 7.9 cents. The same firm will also furnish 29,600 pounds of green same at the same price. Old Dominion Paper Company will furnish 199,000 pounds of 25% rag, 38 x 48½ mimeograph paper at 8.97 cents and the Mudge Paper Company will furnish 52,650 pounds of 50% rag, 24 x 38 white ledger paper at 15.9 cents. Bids for these items were received on August 20.

Bradner & Smith Company will furnish 100,000 sheets of 22 x 28 4 ply white railroad board at $25.52 per M sheets. Old Dominion Paper Company will furnish 138,288 pounds of 50% rag, 31 x 44 lightweight M.F. book paper at 15.5 cents. Bids for these items were received on August 18.

Mudge Paper Company will furnish 80,850 pounds of 50% rag, 36 x 50 lithograph finish map paper at 16.50 cents and Old Dominion Paper Company will furnish 60,950 pounds of 50% rag, 31 x 44 white antique book paper at 10.477 cents. Stanford Paper Company will furnish 641,000 pounds of white sulphite writing paper in 28 in. rolls at 7.59 cents. Bids for these items were received on August 15.

Smith Paper Co. Leases Warehouse

[FROM OUR REGULAR CORRESPONDENT]

COHOES, N. Y., September 15, 1941—Announcement is made here that the Smith Paper Company, of Lee, Mass., has leased the former warehouses of the Harmony Mills which has been idle for some time. The lease was negotiated following a conference between the owners of the property and representatives of the paper concern. The new tenant has acquired the one-story brick building as well as its railroad siding for a period of two years while the lease contains a provision for renewal. The concern will use the building for the storage of hemp and flax tow which are used by the company in the manufacture of special grades of paper. The materials to be stored here will also be used for the manufacture of cigarette paper. Renovations will be necessary to the warehouse as it has been unused since the liquidation of the Harmony Mills. It will also be necessary to make general repairs to a spur railroad track leading from the building to the line of the New York Central. The new concern expects to occupy the building late this month.

Obituary

Charles H. Roberts

Charles H. Roberts, treasurer of Johns-Manville Corporation, New York, died September 10, at Doctors Hospital where he had been confined since August 20 for treatment of a heart ailment. Mr. Roberts was 51 years old and lived in Scarsdale, N. Y.

Born on a farm near Doylestown in Bucks County, Pa., May 8, 1890, Mr. Roberts received his secondary education in Trenton, N. J., and attended the Wharton School of Finance of the University of Pennsylvania until 1907, when he began his business career with J. A. Roeblings Sons Co., as head of their cost department.

Later he served in various capacities in the financial departments of the Mercer Automobile Company, Hess-Bright Manufacturing Company, U. S. Rubber Company, Splitdorf Electrical Company, and Julius Kayser & Co. before joining Johns-Manville in 1928 as assistant general auditor. In that same year he was made general auditor. In 1937 he became comptroller and the following year was appointed treasurer.

Mr. Roberts was a member of the Westchester Hills Golf Club at White Plains, N. Y., Cobleigh Club, Inc., at Rye, N. Y., and the Controllers Institute of America.

Landon Carter

Landon Carter, secretary-treasurer of the Eastwood-Nealley Corporation, wire manufacturers, passed away at his country home in Califon, N. J., on September 3. He has been closely associated with Mr. Nealley of that company for the past twenty years, and through his broad contact with the paper mills throughout the country, he made many friends. Mr. Carter was born in Tennessee 65 years ago and his early years were spent in St. Louis, Mo. Previous to his connection with the Eastwood Company, he had travelled very extensivelv, living in many parts of the world.

He is survived by his widow, Mrs. B. Gilbert Carter.

Walter F. Delbrook

[FROM OUR REGULAR CORRESPONDENT]

INDIANAP'LIS, Ind., September 15, 1941—Walter F. Delbrook, 66 years old, for years a salesman for the Capital Paper Company here, was found unconscious in his automobile last week and died later. Death was due to carbon monoxide poisoning. The widow, a son and two daughters survive.

Appoint Receiver for Ohio Paper Co.

An entry signed Friday by Common Pleas Judge Null M. Hodapp names John W. Schuster and Herman E. Lucas receivers for the Ohio Paper Company, Miamisburg, Ohio. It also fixes the date of October 17, 1941, as the time when all shareholders in the company will appear in court to show cause why the business should not be dissolved.

Suit seeking the receivership was filed by Robert P. Munger, Riverside, Ill. The petitioner avers that the defendant company has been in business many years in the manufacture and sale of rag felt paper and that it is solvent.

Indianapolis Demand Heavy

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., September 15, 1941—Demand for all grades in the paper field continued heavy here last week and prospects are that orders will continue to come easily. Naturally prices were strong and will continue so during the period of the present emergency. There apparently is little danger of a run-away market, according to the local trade. Large paper users have begun an attempt to build up reserve stocks, but because of inability to get deliveries for the most part, their efforts are meeting with but indifferent success.

The fine paper market followed the general trend. Prices are higher than they were some time ago, but according to local jobbers they are not out of line when increased costs of doing business are considered. Books, covers and ledgers all are moving nicely and jobbers are finding it increasingly difficult to secure deliveries in order to meet the trade requirements. The larger printers here are busy and report a good volume of business for later in the fall.

Newsprint demand continued good with prices firm to strong. Lineage in papers, both metropolitan and in the rural communities has increased considerably with the opening of the fall season and gradual increases are expected now until after the holidays.

Wrapping paper and bags are moving well, due largely to the general increase in the retail trade. Tissues also were having a good call last week. Paper boxes and containers are in demand with most of the local factories working to that capacity for which they can secure raw materials. The backlog of orders is very heavy for this time of the year.

Building paper and roofing continued well last week and the prospects for fall are very good, better than a year ago. Dealers have been caught with badly depleted warehouses and broken stocks that they now are having difficulty to build up.

Little change was seen in the waste paper and rag demand, both being wanted by mills and local paperstock men having difficulty in supplying the needs. Prices continued firm on all grades of paper and rags.

To Confer Regarding Lake Levels

[FROM OUR REGULAR CORRESPONDENT]

LAKE GEORGE, N. Y., September 15, 1941 — A resolution has been adopted by the Lake George Association empowering a committee to confer with officials of the International Paper Company in order to formulate plans whereby proper lake levels will be maintained by regulating the paper company dam. This action followed protests from property owners over the unusually low level this year, due, it was explained by an official of the paper company to the lack of rain and the exceptionally heavy draw of water from the lake last spring. He also pointed out that seeking state action would menace the power source of the company and place many paper workers on relief rolls.

Gosling & Farr Lease Building

Gosling & Farr, paper dealers, have leased the six-story building at 33 Bethune street for a long term through Spear & Co., Inc., New York. The lessee has been located at 141 Wooster street for the last thirty-five years.

MAYBE REMOVING CALENDER PLUGS BY HAND ISN'T SUCH A SMART IDEA!

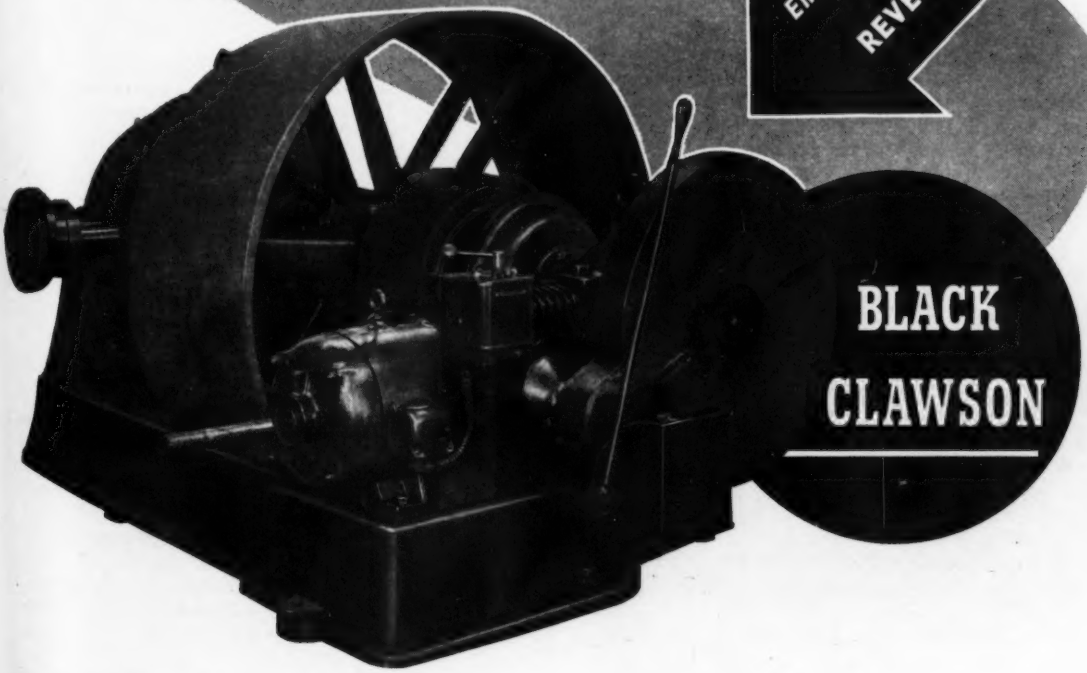
● A slight miscue and a key workman may be injured while removing a calender plug by hand. When you consider the effect on the moral of employees . . . when you check up on the actual monetary loss to your mill —there is only one conclusion: hand removal of plugs should no longer be tolerated.

And especially when this danger spot can be eliminated by the Black-Clawson calender reversing drive. This drive is a typical B-C product . . . vibrationless, powerful, trouble-free. Operate a few simple controls and you do the job not only quicker, but with the mill hand nowhere near the danger spot.

Full information awaits your request.

The Black-Clawson Co., Hamilton, Ohio
SHARTLE DIVISION, MIDDLETOWN, OHIO
DILTS DIVISION, FULTON, N. Y.

End This Danger Spot With CALENDER REVERSING DRIVES



BLACK CLAWSON

Brown Co. To Ask for $6,500,000

Serge Semenenko, chairman of the reorganization managers of the Brown Company, announced this week that, owing to a substantial increase in working capital, the company will borrow only $6,500,000 from the Reconstruction Finance Corporation instead of the $10,000,000 permitted by the plan of reorganization.

Between November 30, 1940, and August 9, last, consolidated working capital increased from $4,011,039 to $7,469,622, after adjustment for foreign exchange, the statement said.

The reorganization managers expect to petition the Federal court in Portland, Me., soon for the approval of numerous documents and detailed procedure necessary to consummation of the plan. Notice of the hearing will be mailed to securities holders.

Consolidated net income of the company and subsidiaries, after adjustment for foreign exchange, was $5,057,839 for the thirty-six weeks ended August 9, before depreciation, depletion, income taxes and deferred interest. After depreciation and depletion charges of $1,231,230 and estimated income and excess profits taxes of $1,291,024, the balance was $2,535,585, which compared with $1,260,362 in the same period last year.

Consolidated net sales rose to $21,637,963 from $17,471,475. Mr. Semenenko said that virtually all the improvement in net earnings came from the domestic operations of the Brown Company. While the Brown Corporation, the Canadian subsidiary, showed a substantial increase in earnings before taxes, the gain was offset by a rise in Canadian income and excess profits taxes.

Garrett-Buchanan Improvements

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 15, 1941—Garrett-Buchanan Company, 12 to 20 South 6th street, Philadelphia, with branches at Baltimore, Maryland, and Reading, Pa., whose slogan is "Everything in Paper and Twine", boasts of twelve departments: bond paper, book paper, cardboard, envelopes, coarse paper, twine, paper specialties, announcements, greeting cards, industrial, school supplies and cover paper. Each department is under the supervision of a manager and an assistant, all of whom are specialists in their particular field. Morgan H. Thomas, president, stated that "in having the business departmentalized, no problems concerning our industry will go unsolved." Afew years ago a new warehouse was acquired comprising a four story brick building 88 x 133 feet, two railroad sidings with modern elevators. The warehouse which is located at 8th and Willow streets, Philadelphia, is another step forward to maintain a complete stock and serve the trade. Complete branch offices and warehouses are maintained in Baltimore, Md., and Reading, Pa., and are under the management of C. Raymond Smith.

George W. Weaver, vice president and general manager of the company, and the present prexy of the Philadelphia Paper Trade Association, was recently elected to the executive committee of the National Paper Trade Association. As general manager of Garrett-Buchanan Company, Mr. Weaver has made great strides in remodeling the offices in general. Fifteen hundred square feet have been added to the sales division, with walnut furniture for all salesmen, latest type fluorescent lighting, accoustical ceiling and a new composition flooring. With these modern changes, this sixty-eight year old company can well boast of being the best equipped and most up-to-date of its kind. Having a reputation for the most diversified line in the east, this company represents some of the largest and most outstanding manufacturers of paper, cardboard, twine and envelopes.

The sales floor, where actual displays of merchandise may be viewed by the trade, is undergoing complete modernization, and a sample room is nearing completion where customers will find a restful atmosphere to match, test, and debate about the stock to be used on their orders of paper and envelopes.

VIEW IN REMODELED SALESROOM

Makes Newsprint from Hardwood

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Sept. 17, 1941—Production of newsprint paper from local hardwood, recently begun in Australia at a Tasmania mill, shows signs of becoming one of the country's most important industries, according to the Department of Commerce.

Experiments to overcome the lack of extensive soft-wood forests in Australia disclosed that swamp gum, an Australian hardwood found in Tasmania, could be used in the manufacture of newsprint.

Australian Newsprint Mills, Ltd., in which two leading newspapers have heavy investments, was organized with government backing and several large timber concessions. The company's plant is at Boyer in the Derwent valley of Tasmania. Units already constructed have an investment value exceeding $3,000,000 and another $5,000,000 will be spent to bring production from the present potential of 37,000 tons of newsprint annually to 100,000 tons. The plant employs 450 workers, and expects to increase its force to 1,000 when the planned new units are in production.

The Department of Commerce points out that the mill will displace a great amount of imported paper. In normal peacetime years, Australia brings in about 150,000 tons of newsprint valued at $6,500,000.

Hummel-Ross Fire Loss $25,000

A fire in the pulpwood department of the Hummel-Ross Fibre Corporation at Hopewell, Va., last week is reported to have cost $25,000.

To Discuss Container Shortage

The prospect of an acute shortage in shipping containers will be the subject of an American Management Association meeting on Friday, September 26, at the Hotel New Yorker, New York. The conference, which is being held by the AMA at the request of the Office of Production Management, will bring together producers, processors and users of shipping containers from throughout the country.

As the AMA outlined the situation, the container shortage affects not only fiber boxes but set-up boxes, folding cartons, wooden and wirebound shipping containers, wrapping paper and bags as well. "Both board and container production mills, plus newly reopened plants now running at capacity, will undoubtedly prove inadequate to meet both the requirements of defense plants and consumer goods," the Association stated. "Notable improvements have been effected in manufacturing facilities and methods, but the strong probabilities are that there will be no immediate improvement in the situation. Contracts with container manufacturers do not provide a sure safeguard against dislocation of manufacturing methods and future production bottlenecks."

The sessions will be presided over by Albert W. Luhrs, President of the Container Testing Laboratories, of New York City, who has been working closely with the OPM's Container Section. Speakers during the day will include Norbert A. McKenna, Chief, Pulp, Paper, Printing and Publishing Section, OPM; and Walter Shorter, Chief, Container Section, OPM. Mr. McKenna and Mr. Shorter will outline the present emergency in shipping containers and will discuss methods of meeting it. Another speaker during the morning session will be M. Howard Morley, Managing Director, Thames Board Mills, Ltd., Purfleet, Essex, England. Mr. Morley will tell how Britain met and solved packaging and shipping container problems.

The afternoon will be devoted to the discussion of "How Can American Industry Meet the Problem?" Among those who will participate in the symposium on this subject will be: Major James M. Berry, Q. M. C., Chief, Packing Technical Unit, Standardization Branch, Supply Division, Office of the Quartermaster General; A. Harry Greenly, Chairman, Official Classification Committee, New York, N. Y.; R. H. Bursch, general sales manager, Southern Kraft Corporation; E. R. Gay, vice-president, St. Regis Paper Company; R. L. Beach, General Electric Company; Stuart Edgerton, United States Rubber Company; W. R. Hummel, Western Electric Company; M. M. Olander, Owens-Illinois Glass Company; W. F. Rode, Colgate-Palmolive-Peet Company.

Paper Demand From Thailand Grows

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 17, 1941—A growing demand for newsprint, colored papers, simili, bank papers, bond and strawboard, together with a limited need for glassine, tissue crepe and pressboard is reported from Thailand to the Department of Commerce.

Before the war, some newsprint was imported from Europe and Japan and the remaining needs were met with the output of the Thai (Siam) Government Paper Mill. Local output has increased, but is still insufficient to meet the country's requirements and prices have steadily gone up.

New Rules for Purchasing Agencies

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 15, 1941—New regulations have been promulgated by the War Department to all of its 815 purchasing agencies throughout the country effecting new policies designed to bring more of the nation's industries into the defense program as suppliers.

The new regulations liberalize procurement methods, allow regional bidding, and permit industries to negotiate with the Army for contracts either individually or in groups, and awards in some cases can be made at prices up to 15 per cent increase over the lowest quotation received or last price paid. Trial orders may be placed and performance bonds eliminated when necessary, and inspections on items will be made at the plant in order to facilitate payments to contractors.

Contracting officers are permitted to divide awards so that parts can go to several plants instead of to single low bidders.

Use Newsprint for Wrapping

Sheet newsprint from Canada is being imported into Puerto Rico for use as wrapping paper. Inasmuch as the sheets are 20 x 30 inches in size, the paper is properly admitted as standard newsprint duty free, according to the Import Committee of the American Paper Industry.

A question has been raised as to the dutiability of a ground wood printing paper, lightly washed on one side with clay. In the opinion of representative manufacturers this material is dutiable as a groundwood printing paper, and not as a coated paper. While it is in fact, coated, the coating is so light as to be almost imperceptible, and the paper is far from the type known in the paper industry as coated paper.

While the Customs officials have not as yet decided the problem involving the method of determination of the true weight of newsprint papers which may have gained weight by moisture absorption, several cases scheduled for trial at Minneapolis this month involve the claim by importers that the weight found by Customs chemists was not the true weight of the paper as imported.

Discuss Priority Rating

Preliminary steps are now being taken within the paper industry to obtain a more favorable priority rating for the industry as a whole. It is felt that as a few industries have been given a preferential status, the paper industry because of its importance to defense and civilian needs, may be able to obtain a more favorable rating if all major divisions of the industry cooperate to that end.

Meeting of the several leading divisions of the paper industry are now being held and it is hoped that through this discussion a blanket priority rating may be obtained which will prove of benefit to all engaged in the paper industry during the continuance of the unlimited emergency period.

A. H. Miller Leaves Certain-teed

A. H. Miller, a director and executive vice president of the Certain-teed Products Corporation announces his resignation from these offices due to personal matters which require his attention.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending September 17, 1941

	High	Low	Last
A. P. W.	1¼	1⅛	1⅛
Armstrong Cork Co.	29½	28½	29½
Celotex Corp.	9¼	9	9¼
Celotex Corp., pf.	72	70	72
Certain-Teed Products Corp.	3¾	3⅝	3¾
Certain-Teed Products Corp., pf.	35½	32⅜	35
Champion Paper & Fibre Co.	22	21½	22
Champion Paper & Fibre Co., pf.	106	104½	104½
Congoleum-Nairn Co.	18¾	18⅛	18⅜
Container Corp. of America	15¼	15	15¼
Continental-Diamond Fibre Co.	9⅞	9⅝	9⅞
Crown-Zellerbach Co.	14⅛	13¾	14⅛
Crown-Zellerbach Co., pf.	91	90	91
Flintkote Co.	14½	14⅛	14½
Robert Gair	2¾	2⅝	2⅝
Robert Gair, pf.	11⅝	10¼	11
International Paper & Power Co.	19⅞	17⅞	19⅞
International Paper & Power Co., pf.	71½	68¾	71⅜
Johns-Manville Corp.	71	67¾	71
Johns-Manville Corp., pf.	....	....	....
Kimberly-Clark Corp.	31	30⅞	31
MacAndrews & Forbes	29¼	28½	29¼
MacAndrews & Forbes, pf.	136	136	136
Masonite Corp.	27¼	26½	27
Mead Corp.	9	8½	9
Mead Corp., pf.	70	70	70
Paraffine Companies, Inc.	31½	30¾	31½
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	15½	15⅛	15½
Rayonier, Inc., pf.	28½	28	28
Ruberoid Co.	20⅛	19⅜	19¾
Scott Paper Co.	38⅞	38½	38½
Scott Paper Co., pf.	110¼	110⅛	110⅛
Sutherland Paper Co.	19⅞	19⅜	19½
Union Bag & Paper Corp.	11⅜	10⅞	11⅛
United Paperboard Co.	4½	4¼	4⅜
U. S. Gypsum Co.	58¼	56⅜	57
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	19⅞	19½	19⅞

New York Curb Exchange

High, Low and Last for Week Ending September 17, 1941

	High	Low	Last
American Box Board Co.	....	....	....
Brown Co., pf.	25¾	24	25⅜
Great Northern Paper Co.	39¾	39⅜	39¾
Hummel-Ross Fibre Corp.	6⅝	6	6¼
National Container Corp.	10⅜	10¼	10⅜
St. Regis Paper Co.	2¼	2⅛	2¼
St. Regis Paper Co., pf.	109⅜	109	109
Taggart Corp.	3¼	2⅞	3¼

Date Set for Abitibi Payment

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 15, 1941—The Master of the supreme court of Ontario has fixed October 15, 1941, as the date bondholders of Abitibi Power and Paper Co., Ltd., will receive payment of $130 on account of principal for each $1,000 of bonds held. The total payments will amount to $6,274,710.

Holders of bonds have been advised to present bonds on or after October 15 next, with all interest coupons from June 1, 1932, inclusive, to the Montreal Trust Company, in Montreal, Toronto and London, or to the City Bank Farmers' Trust Company, New York. The bonds so presented will be stamped in respect of the payment and returned to holders.

Following this announcement Abitibi 5's were up four points on the local stock market, with 78 bid, which seemed to give a lift to the paper group in general.

Harris-Seybold-Potter Nets $2.37

The Harris-Seybold-Potter Company for the year to June 30, reports a net income of $402,683, equal, after preferred dividend requirements, to $2.37 each on 130,276 common shares, against $250,535, or $1.18 a common share in preceding fiscal year.

Celotex Earns $1,208,704

The Celotex Corporation had net earnings of $1,208,704 after all charges including provision for Federal income and excess-profits taxes in the nine months ended on July 31, 1941.

After allowing for dividend requirements on the preferred stock, the earnings are equal to $1.72 a share on the 638,410 shares of common stock outstanding, and compare with $305,458 or 30 cents a share in the corresponding period of the preceding fiscal year.

The exact amount of the corporation's liability for excess profits taxes cannot presently be determined, the report states. The sum provided—$392,000—is the maximum estimated liability allocable to the nine months period ended on July 31, 1941.

Net sales for the nine months increased to $13,726,457 from the $9,599,547 volume of the similar period a year before.

For the quarter ended on July 31 last the company showed a net profit of $447,468 on net sales of $5,426,348. Net for the July quarter last year was $422,855 and sales totaled $4,132,800.

National Container Nets $1.37

Samuel Kipnis, president of the National Container Corporation, reports that profit for the half ended June 30, 1941, before Federal normal and excess profits taxes amounted to $792,899.17, compared with $710,527.03 for the first half of 1940.

Net profit after all charges including Federal normal and excess profits taxes totaled $455,549.17 for the first half of 1941 equal to $1.37 per share compared with $477,871.62 (adjusted) for the first half of 1940 equal to $1.44 per share on 330,482 shares of common stock outstanding.

Combined net sales of National Container Corporation and its subsidiaries for the first half of 1941 were $4,259,681.19 compared with $3,564,242.12 for the first half of 1940.

United Paperboard Profits Up

The United Paperboard Company and subsidiaries for the year to May 31, reports net profit of $49,045, equal to $5.61 each on 8,733 shares of $100 par 6% preferred stock, excluding 6,267 shares in treasury. Net profit in previous year was $23,559, or $2.59 a share on 9,100 shares of preferred stock. Net sales were $3,611,162, compared with $2,683,503. Current assets on May 31 last were $1,771,870, and current liabilities, $223,282, compared with $1,839,342 and $245,989, respectively, on May 25, 1940.

Bathurst Earnings Up

The Bathurst Power and Paper Company for the six months to June 30, reports a net income after provision for dominion income and excess profits taxes calculated at rate of 40%, $406,637, equal, after Class A dividends, to 1 cent each on 300,000 shares of Class B stock.

CONSTRUCTION NEWS

Tampa, Fla.—The Gaylord Container Corporation, 2909 Inman avenue, manufacturer of corrugated boxes and containers, has approved plans for new addition to local plant, consisting of a one-story structure, estimated to cost close to $45,000, with equipment. Contract for erection has been awarded to Albert Haworth, 628 Raymond avenue, Tampa, and work will be placed under way soon. Main offices are at 111 North Fourth street, St. Louis, Mo.

Chicago, Ill.—The Philip Carey Manufacturing Company, Lockland, Cincinnati, Ohio, manufacturer of roofing and insulating papers, asbestos paper board, etc., has arranged for purchase of tract of land at Roosevelt road and Talman avenue, Chicago, consisting of about 2½ acres, heretofore held by the American Laundry Machinery Company, Norwood, Cincinnati, and will use as site for new plant. Property is now improved with a one-story building, totaling 40,000 square feet of floor space, occupied under lease by another company, expiring in 1942, when Carey company will take over this building for occupancy. Plans will be prepared for a large one-story plant adjoining this structure, which will be used for auxiliary service, including storage and distribution, in conjunction with new works. The works will be equipped for extensive output to serve the Mid-Western territory and will represent a large investment; according to deed filed, a consideration of $77,500 has been given for property. As soon as new plant is ready, present local factory branch of company at 4512 West Fillmore avenue, will be removed to that location.

Easton, Pa.—The Individual Drinking Cup Company, 24th street and Dixie avenue, Easton, manufacturer of paper cups, has completed plans for new one-story addition to plant, for expansion in production department. It is reported to cost close to $80,000, including equipment. General erection contract has been let to the Lauter Construction Company, Otis Building, Philadelphia, Pa., and work will be placed under way at once. Company is an interest of the Dixie-Vortex Company, 421 North Western avenue, Chicago, Ill.

Hamilton, Ohio—The Champion Paper and Fibre Company, North B street, manufacturer of coated and uncoated papers, bond and other stocks, has begun erection of new one-story addition to mill, about 50 x 112 feet, recently referred to in these columns, and will push to early completion. It is reported to cost over $55,000, with equipment. F. K. Vaughn, First National Bank Building, Hamilton, has the general erection contract.

New York, N. Y.—The H. Paper Box Company, Inc., manufacturer of paper boxes and containers, has leased a floor in building at 324 Lafayette street, and will occupy for plant.

Los Angeles, Calif.—The Schumacher Wall Board Company, Inc., 4301 Firestone boulevard, South Gate, manufacturer of wall board and kindred products, has work in progress on new one-story mill addition, previously referred to in these columns, and will have structure ready for occupancy in near future. It is reported to cost close to $25,000, including equipment. MacIsaac & Menke, 3445 Union Pacific avenue, Los Angeles, have the erection contract.

Brookville, Ind.—The Williams Felt and Paper Company, Canal street, manufacturer of roofing papers, felts, etc., has plans under way for new one-story addition to mill, including alterations and improvements in present plant. Cost reported over $75,000, with equipment. Work is scheduled to be placed under way soon.

Boston, Mass.—The Century Paper Company, Inc., 137 Federal street, general paper products, has leased a floor in building at 275 Congress street, and will occupy for storage, distribution and local offices.

Seymour, Conn.—The Pond's Extract Company, Seymour, manufacturer of facial tissue stocks, etc., has begun erection of two one-story additions to plant, 80 x 200 ft., and 80 x 125 ft., respectively, previously referred to in these columns. The first noted will be used for paper storage and distribution, and other structure for pulp storage purposes. Cost estimated about $65,000, with equipment. The H. Wales Lines Company, 134 State street, Meriden, Conn., has the general construction contract. Frederick L. Smith, 21 East Fortieth street, New York, N. Y., is engineer.

Three Rivers, Que.—The Canadian International Paper Company, Sun Life Building, Montreal, Que., has plans for modernization and improvements in coal-handling plant at newsprint mill at Three Rivers, with installation of additional equipment. Cost reported close to $90,000, with machinery. Other improvements also will be carried out at mill.

New Companies

Lockport, N. Y.—The Lockport Paper Board Company, Inc., has been incorporated with capital of $100,000, to manufacture paper board products. It is proposed to operate a local mill. New company is represented by Ward & Ward, Erie County Bank Building, Buffalo, N. Y., attorneys.

Rochester, N. Y.—Genesee Finishing Corporation has been chartered with capital of 100 shares of stock, no par value, to manufacture paper products of various kinds. New company is represented by J. Raymond Tobin, Genesee Valley Trust Building, Rochester, Attorney.

New York, N. Y.—Stor-Aid, Inc., has been organized with capital of $100,000, to manufacture paper boxes and containers, paper garment bags and allied products. New company is represented by David M. Engelson, 415 Lexington avenue, New York, attorney.

New York, N. Y.—Paper Processes, Inc., has been chartered with capital of $28,000, to take over and consolidate the organization of same name and and Reid Processes, Inc., and deal in paper-manufacturing processes and inventions covering same. New Company is represented by Crav-, ath, DeGersdorf, Swain & Wood, 15 Broad street, New York, attorneys.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

Vol. 113 September 18, 1941 No. 12

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Asscciation of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

PRIORITY RATINGS

As the concentration of the productive capacity of the country continues in furtherance of the national defense program, it becomes plainer every day to the business man that difficulties and hardships must result if the almost herculean effort is long continued. It is hard for the business man to properly evaluate the magnitude of the undertaking and particularly so to arrive at any clear conception of the great quantities of the diverse materials needed. This is so, because the total requirements of materials include not only domestic needs but the necessary supplies for several European nations actively engaged in combating aggression. Without the full information which it may be assumed the government possesses, it is impossible for anyone less well informed to estimate the potential and actual tonnage of metals, chemicals and all other materials and manufactured articles which are included in the vast armament plan to restore the world to some semblance of normalcy.

Nine out of ten of the nation's small non-defense manufacturers believe they soon will be forced to reduce operations drastically because of raw material or equipment shortages. Curtailment of production, dis-employment, even complete shutdowns are inevitable unless unforeseen circumstances change the present situation. This major conclusion is drawn from a survey of 6,000 manufacturers just completed by the Chamber of Commerce of the United States. Reports received from California, from Georgia, from Maine and Michigan and every state almost invariably sound the same note. "My company is finding it increasingly difficult to get raw materials. The future is uncertain. If things keep going the way they are, I don't see where or how we can get supplies a few weeks from now."

The chief concern of the average small manufacturer, the comment states, is "fear of the immediate future. Typical is a paragraph from a Chicago manufacturer of screw machine products. He reports: 'While we are presently running along with reasonable satisfaction, considering the times, we anticipate ever-increasing difficulties in obtaining our necessary raw materials. In the case of raw materials required for non-defense items, it seems to us that the near future will bring about an almost complete cessation of deliveries.' This Chicago manufacturer's defense work represents approximately 60% of his total business. Here and there, of course, shutdowns have already occurred, or production has been cut in half. A Virginia manufacturer of signs, for instance reports: 'Sheet steel is essential to my business. I've tried a number of substitutes without success. I normally employ over 200 people. A month ago I had to release 60 of them'."

Continuing the comment states: "The survey indicates that the manufacturer who can adapt his facilities to the production of defense items is confronted with an illusive problem. Eventually, he expects to be offered government orders, either directly or as a sub-contractor. In many cases, part of his work already is devoted to defense. Many manufacturers, however, are dubious about their ability to convert their facilities to defense production. Their specialized machinery is designed only for the fabrication of their specialized product. Although a relative few manufacturers have achieved notable success in the development of substitutes, the great majority are discovering that substitutes are as difficult to obtain as the original material. Production experts who think they have the answer in substitutes are swiftly disillusioned when they find that the new material is also on OPM's priorities critical list."

Difficulties are rapidly increasing in obtaining materials for maintenance of equipment as well as for direct production, orders for which are very heavy and far exceed present facilities of output in most lines." A small but marked proportion of manufacturers, the Chamber's survey stated, "report that many materials of vital importance are becoming increasingly difficult to obtain, despite the fact that their plants are directly or indirectly engaged, for the most part, on defense work. In this connection, for example, an Ohio manufacturer asserts: 'It is rapidly getting to the point where a small manufacturer, such as ourselves, will be forced to cease operations. This in spite of the fact that a minimum of 70% of our sales are for defense projects. We have applied to the Priorities Division for assistance, but we are still without any direct help. We have had two representatives in Washington discussing the matter with the division, and each time they give us an entirely different story as to what is necessary and what we are to do.' "

Many manufacturers are necessarily grouped within the classification of producers not making military

goods of any kind and their position is especially difficult and uncertain. The Chamber's survey points out that, "One of the major problems of many small manufacturers is to be found in the difficulty of obtaining priority ratings when their work is not of a direct defense character, although essential to defense, since they act as suppliers for defense prime or subcontractors. Others complain that the ratings assigned to their companies are too low to be of much value in obtaining needed equipment and materials."

In conclusion the Chamber of Commerce of the United States states in commenting on priorities, that, "While Cognizant of the problems of government under the stress of growing national emergency, manufacturers generally expressed themselves as believing that they should have received more advance warning concerning the extent and nature of raw material shortages."

Union Bag Employees To Vote

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, September 15, 1941—An election is to be held here in order to determine if a majority of the employes of the Union Bag and Paper Corporation desires the International Brotherhood of Pulp, Sulphite and Paper Mill Workers to represent them in collective bargaining with the company. This agreement was reached at a meeting held last week. A petition asking certification of the organization as bargaining agent was recently filed by the workers with the National Labor Board covering all workers except paper mill workers, supervisors and company officers. The petition indicated that about 95 per cent of the workers wish to have the organization represent them. The meeting this week was represented by Sidney Taylor, attorney for the company, Raymond Leon, representative of the organization, and Victor A. Pascal, of the Labor Relations Board. It was also stated that workers now serving in the army, on vacation, or ill will be sent ballots by mail. Recently the bag factory division organized a local unit of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers with Ersking J. Truesdale as president.

Buy Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 17, 1941—During the week ending August 30 the government purchased $758,985.49 worth of paper under the Walsh-Healey Act with the following orders:

$13,733.79 worth of filter paper for War Med. Brooklyn, from Eaton-Dikeman Company; $15,921.75 worth of mimeo paper for GPO, from Old Dominion Paper Company; $17,850 worth of mimeo paper for GPO, same company; $43,250 worth of book paper for GPO, from R. P. Andrews Paper Company; $17,250 worth of book paper for GPO, from Stanford Paper Company; $21,434.64 worth of book paper for GPO, from Old Dominion Paper Company; $420,000 worth of Kraft board for Treas. Proc. D. C., from International Paper Company; $26,304.94 worth of paper for War QMC N. J., from Inland Empire Paper Company; $183,240.37 worth of paper, pads, for War QMC N. J., from Zellerbach Paper Company.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks, 1941		Corresponding Weeks, 1940	
August 2	100.4	August 3	87.4
August 9	102.3	August 10	87.9
August 16	101.1	August 17	84.6
August 23	102.8	August 24	84.7
August 30	101.9	August 31	83.4
September 6 (Prelim.) (Holiday Week)	*86.1*	September 7	69.3

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1940	89.1	84.7	82.3	84.3	90.0	92.1	85.3
1941	85.6	89.7	92.2	96.4	98.9	99.5	94.8

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1940	85.1	81.5	85.5	84.9	80.9	85.6
1941	*102.0*	...	...	...	...	...

COMPARATIVE YEARLY SUMMARIES

	1935	1936	1937	1938	1939	1940	1941
Year to Date..	68.4	77.9	86.4	68.9	78.8	86.2	*94.4*
Year Average..	69.9	80.4	79.8	71.5	83.4	85.6	...

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	62	67	67	70	69	70	69	75	78	82	80	74	72
1937	80	86	86	88	85	77	66	74	69	65	55	45	73
1938	54	60	61	57	58	56	57	66	66	70	65	59	61
1939	60	67	71	69	64	67	63	72	74	84	81	71	70
1940	71	70	69	70	76	79	72	74	72	79	77	71	73
1941	75	81	82	83	84	88	86	*94*	..	..	..	..	..

Week ending Aug. 2, 1941—93
Week ending Aug. 9, 1941—91
Week ending Aug. 16, 1941—92
Week ending Aug. 23, 1941—94
Week ending Aug. 30, 1941—97
Week ending Sept. 6, 1941—*80*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Carton Credit Men Hold Outing

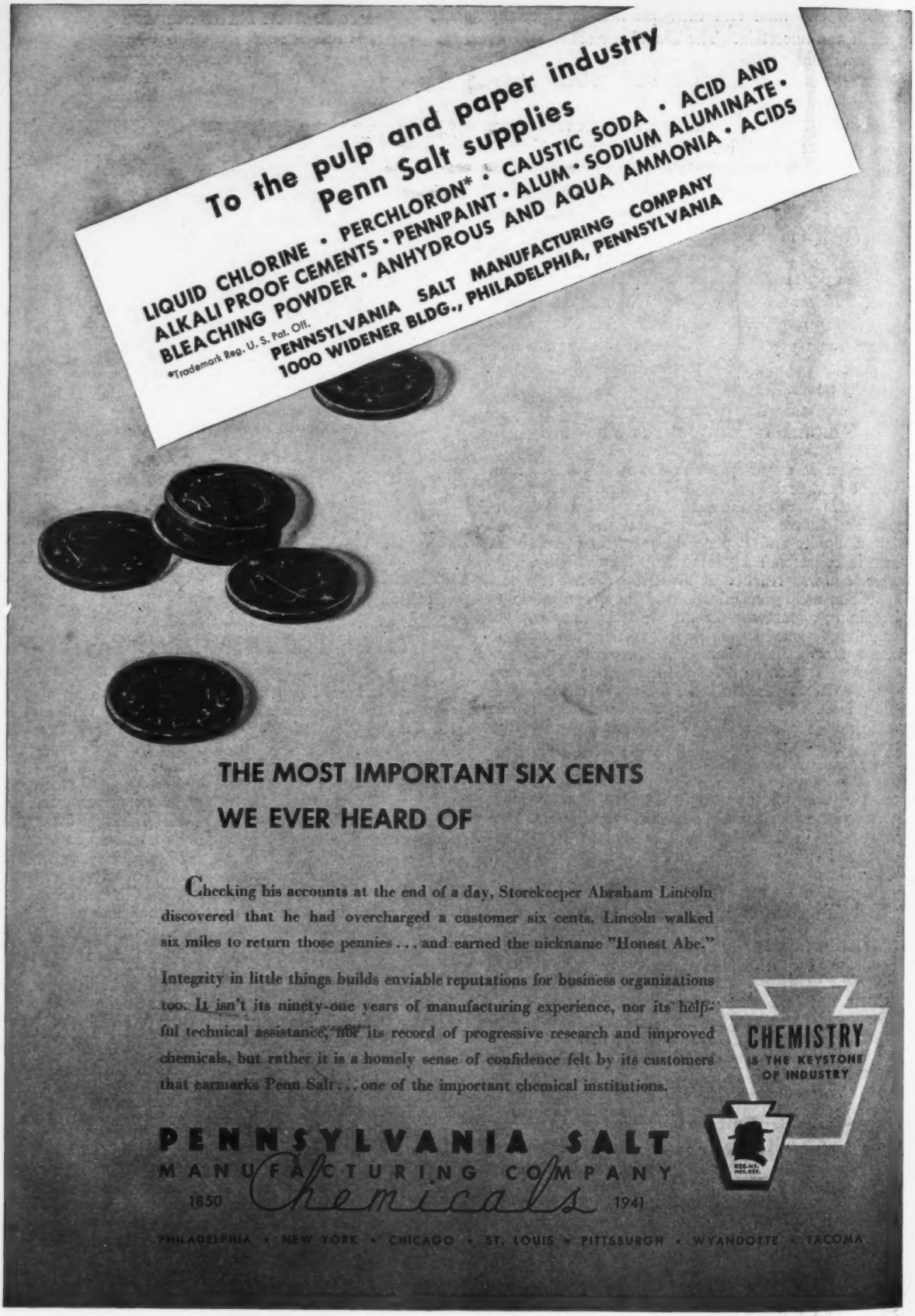
[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 15, 1941—With an attendance of approximately 100, including William R. Kreeger, secretary of the National Paper Box Manufacturers Association, who discussed developments in connection with the defense program in a general New England Industry meeting, and with golf and other sports in which valuable prizes were awarded to the winners, the annual outing of the Carton Credit Bureau and Supply Men, held at the Vesper Country Club, Tyngsboro, Mass., September 9, was both highly enjoyable and informative.

Teeing off began early in the day, with golf continuing until late in the afternoon, while the other sports events occupied much of the time. Both luncheon and dinner were served as part of the program.

Another feature of the outing was the fact that it was the 20th anniversary of the event at the Vesper Country Club, in honor of which the steward of the club arranged an attractive design, hung in a prominent place in the dining room, on which was inscribed "1921-1941 Twentieth Anniversary Vesper Welcomes You." Included in the design were two cartons bearing the words "Carton Club."

Towards the close of the dinner, a birthday cake, brilliant with 20 candles, and made by the steward, was placed before the secretary of the organization, John L. Munro, at the head table, as another appropriate touch to the occasion. Mr. Munro, with fitting words, presented the cake to Clarence A. Wiswall, as the dean of the New England trade. Mr. Wiswall, who retired from active business some years ago, expressed his appreciation for the gift.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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

The Drainage Resistance of Mechanical Pulps*

By W. O. Hisey[1] and Konstantene Matchuk[2]

Abstract

Seventeen commercial and experimental mechanical pulp samples were tested for specific resistance under varying conditions of concentration of pulp and pressure differentials. The average concentration coefficient for these pulps was found to be 0.40, which was very close to that of 0.45 previously found for a sample of alpha fiber. As a result of this close correspondence, it appears probable that the concentration coefficient for all pulps may be similar, in which case the specific resistance determination may be of considerable importance for engineering calculations on filters and forming machines used in handling fibrous materials. It was found that the compressibility of the fibers in the various pulp samples was closely related to the specific resistance, probably due to the fact that the flexibility of the fibers and small diameters of the pores among fibers in a sheet are both related to average fiber diameters. Specific resistance was shown to have a high positive correlation with the drainage factor and to be much more sensitive to changes in pulp properties in the range of low freeness than is the freeness test. Specific resistance also has a fair degree of correlation with bursting strength, tensile strength, and porosity of pulp sheets, but has little or no correlation with tearing resistance, stiffness, or density.

The research herein reported is a continuation of the work previously reported by Hisey and Heigl *(2)*. In this previous work it was shown that the drainage of water from pulp suspensions, during the process of the formation of a fibrous sheet, could be considered as a problem in filtration and that Poiseuille's law applied. A theoretical analysis was made of the drainage problem and the formula:

$$P = K V W^2 m R_s$$

was derived from Poiseuille's law to describe the relationships existing between the variables under conditions of constant rate of flow. In this formula:

P = Pressure drop across the pulp mat at a given instant
K = A constant
V = Rate of flow of water from the forming mat, per unit of area
W = Weight of pulp in the mat, per unit of area
m = Viscosity of the fluid
R_s = Specific resistance of the fibrous material.

An apparatus was designed and constructed to carry out sheet formation under conditions of constant rate of flow and the above-mentioned formula was tested experimentally. It was found that the formula fitted the experimental data with a high degree of accuracy, but that allowances had to be made for the secondary effects due to variable concentration of fiber in the pulp suspensions and to the variable pressure drops across the forming mats of pulp. With these allowances, the specific resistance of a pulp could be determined, the value for any given pulp sample being a constant regardless of the conditions of testing. The specific resistance has a definite physical meaning, varying with the fourth power of the average diameter of the pores in the sheet through which water is flowing, and is thus related to the degree of fineness of the fibers and to their flexibility.

The determination of specific resistance appeared to offer considerable promise as a method of determining an important pulp property, since it had a definite meaning and appeared to be of good sensitivity in both high and low ranges of freeness, where the usual freeness tester is insensitive. This property indicated that it would be of special value in the testing of mechanical pulps, especially since such pulps are of low freeness, in which range the freeness test is of poor sensitivity, significant variations in pulp properties being associated with changes in freeness which are close to the limits of error of the testing method. For this reason the present research was undertaken, in cooperation with the Mechanical Pulping Committee of the Technical Association of the Pulp and Paper Industry, with the object of applying the specific resistance tests to a series of mechanical pulps to determine the applicability of the test to such pulps. The results of this work form the subject matter of the present report.

Apparatus

The apparatus used in this study was the same as that previously described *(2)*, with the exception that the recording vacuum instrument was replaced by a mercury manometer. This change was made since only the maximum pressure drop, reached at the end of the period of sheet formation, was of interest, and it was felt that the use of the manometer would eliminate any possible instrumental errors associated with the use of the recorder. During the formation of the sheet, the rising pressure drop across

* An abstract of a thesis presented to the New York State College of Forestry in partial fulfillment of the requirements for the degree of Master of Science.

[1] Member TAPPI; Associate Professor, Department of Pulp and Paper Manufacture, New York State College of Forestry, Syracuse, N. Y.
[2] Member TAPPI; Kimberly Clark Corporation, Kimberly, Wis.

TABLE I.—PRODUCTION DATA AND PULP PROPERTIES

Sample	Wood Species	Pit Temp. ° F.	Grinding Conditions: Grinding Pressure lb./sq. in. pocket area	Grinding Conditions: Production Rate tons/day/sq. ft. pocket area	Grinding Conditions: Power Consumption hp. days/ton	Drainage Characteristics: Freeness Canadian Standard	Drainage Characteristics: Drainage Factor T 205 m	Drainage Characteristics: Specific Resistance (corrected)	Strength Properties [1]: Burst [2] Factor	Strength Properties [1]: Tear [2] Factor	Strength Properties [1]: Caliper Mils	Strength Properties [1]: Porosity Gurley sec./100 cc.	Fiber Classification: Through 100 mesh
1	Spruce	160	40	2.02	31.6	159	13.3	0.15	0.10	0.43	16.9	9.7	39.5
2	Spruce	170	40	2.14	57.6	40	67.0	1.29	0.23	0.36	13.3	83.0	63.1
3	Spruce	170	50	1.25	32.2	70	31.6	0.55	0.20	0.57	15.2	26.5	49.1
4	Spruce	170	40	1.89	50.5	73	31.3	0.50	0.21	0.54	15.0	31.8	50.0
5	Red Pine	175	40	0.70	79.8	65	45.0	0.72	0.21	0.45	16.9	45.9	51.0
6	Red Pine	175	45	0.55	105.5	35	80.0	1.21	0.24	0.61	15.2	78.4	51.4
7	Fir-Spruce	175	40	1.17	58.0	113	28.4	0.48	0.21	0.55	14.1	50.2	46.1
8	Spruce-Balsam	175	30	1.32	60.0	47	58.5	1.15	0.22	0.53	14.3	61.0	54.0
9	Spruce-Balsam	160	50	0.94	65.0	58	50.0	.90	0.27	0.27	13.4	95.1	49.0
10	Spruce	...	23	0.63	80.1	48	64.3	1.24	0.29	0.56	12.5	109.7	48.8
11	Spruce-Balsam	155	45	1.35	61.5	78	35.2	0.73	0.16	0.46	14.2	41.7	51.9
12	Spruce-Balsam	150	45	0.29	61.6	74	31.4	0.68	0.24	0.56	13.8	49.5	56.9
13	White Fir	185	41	0.30	65.0	129	20.2	0.57	0.15	0.51	16.0	14.6	39.3
14	Spruce-Balsam	175	32	1.09	75.0	89	29.4	0.62	0.22	0.60	15.8	38.8	39.5
15	Hemlock	130	26	1.14	61.2	93	30.0	0.85	0.18	0.51	15.0	38.7	44.5
16	White Fir	142	26	1.14	56.8	82	34.5	0.94	0.21	0.64	14.8	35.9	39.1
17	Spruce	138	26	1.14	66.9	26	96.7	2.10	0.35	0.94	13.3	174.7	37.8

[1] Strength properties determined on samples made in British sheet machine (TAPPI Standard T 205 m). All sample sheets made to basis weight of 100 lb. on 25×40—500 basis.
[2] Strength factors determined by division of test value by sheet basis weight.

the mat was followed on the manometer, the maximum value being recorded. The method of operation was the same as that previously described, a record being kept of the dry weight of the fiber in each sheet, the volume of the liquid in the headbox (from which the concentration of stock could be calculated) and the maximum pressure drop across the sheet at the end of the period of formation. All tests were made in triplicate. Care was taken to hold the pressure drop to a value less than 60 cm. Hg, since the rate of flow produced by the pump decreased at pressures above this value.

Description of Tests

Two series of tests were made on each sample of pulp which was used in this work: (1) a series in which the weight of pulp used for each sheet was held constant but the volume in the headbox was varied, thus producing a variation in the concentration of stock from which the sheet was formed; (2) a series in which the concentration in the headbox was maintained at a constant value but the volume of the suspension (and the weight of pulp) was varied. This method of operation gave the necessary data from which the effect of pressure on specific resist-

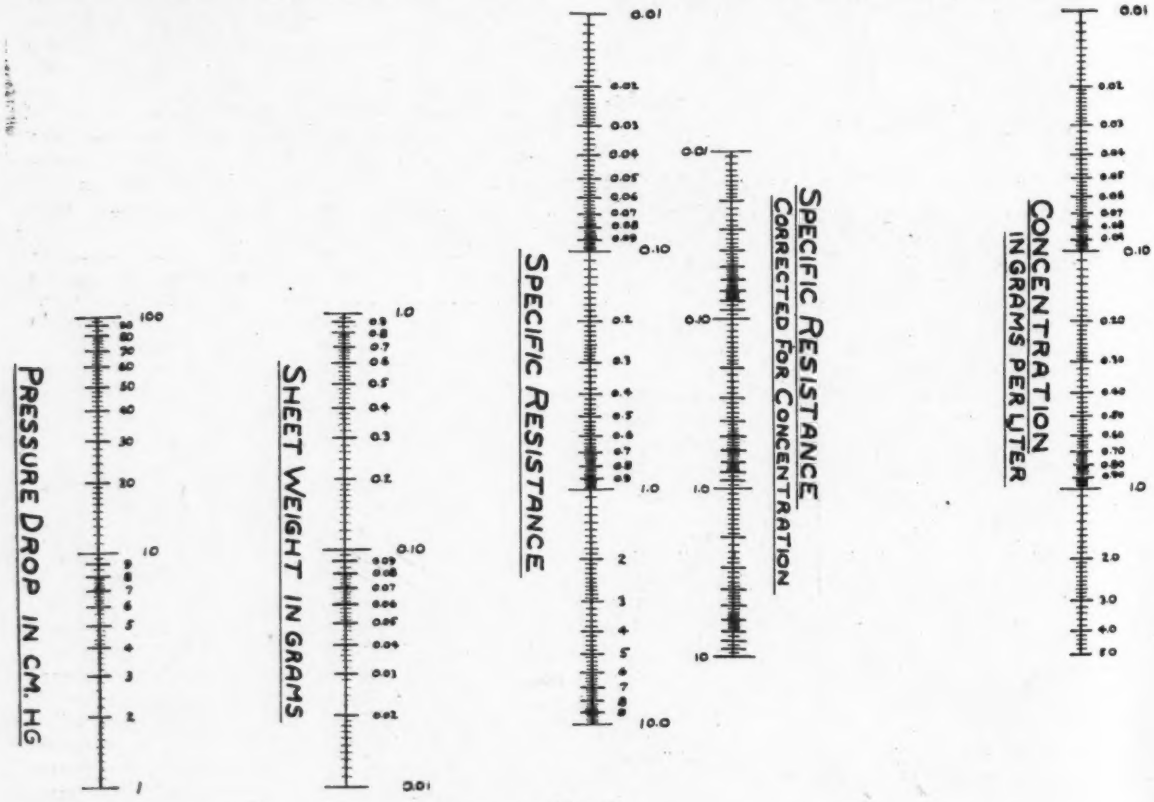

FIG. 1
Nomograph Used in the Calculation of Specific Resistance

ance and the effect of concentration on specific resistance could be obtained, separately. White water was recirculated for all tests, care being taken to ensure a balanced condition in the system before running any tests. The water temperature was maintained at 25 deg. C. throughout this study, to maintain the viscosity of the water at a fixed value.

The mechanical pulp samples used in this study were of a wide variety of properties, and were chosen to be representative of the many types of pulps which are used commercially. Of the 17 different mechanical pulps used, 11 were obtained from commercial pulp mills located in various sections of the United States and Canada, and were representative of the types of pulp entering into the manufacture of newsprint, catalog, rotogravure, and tissue papers. The remaining 6 samples were produced experimentally on the semicommercial grinder at the College of Forestry and represented a wide variety of grinding conditions. The properties of these pulps and the grinding conditions under which they were produced are given in Table I. It is to be noticed that these various pulps had freeness values varying from 26 to 159 cc. (Canadian standard) and were produced with power input varying from 31.6 to 105.5 hp. days per ton.

In making tests, the system was first brought to a balance, with respect to white water, by making a series of 15 to 20 sheets of the pulp to be used, preparatory to every series of tests. Experiment had indicated that this number was sufficient to produce a balanced condition in the system. Preliminary tests were made on every pulp sample to determine the limiting sheet weight to prevent the pressure differential across the forming sheets from exceeding 60 cm. Hg. The pump was calibrated and it was found that if the pressure drop did not exceed this amount the displacement of the pump was 51.1 liters per square meter of sheet surface per second, and this rate did not drop more than 3% at the highest pressures used. This rate of flow was maintained as a constant throughout the study. Each sample was disintegrated for a period of 1 minute in a motor driven laboratory stirrer and introduced into the partially filled headbox. The volume of the suspension in the headbox was then adjusted to the required volume for the given test and the suspension thoroughly mixed with a hand stirrer. The pump was started immediately, to prevent flocculation of the pulp, and the maximum pressure differential pressure, produced at the final instant of sheet formation, was recorded. The wet sheet was removed from the wire and dried in the oven, its dry weight being recorded.

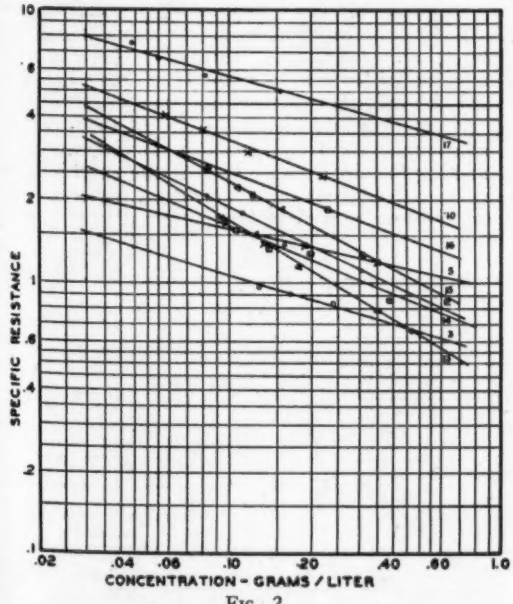

FIG. 2

Chart Showing the Relationship between Specific Resistance and Pulp Concentration, Specific Resistance Values Having Been Approximately Corrected for Pressure Drop

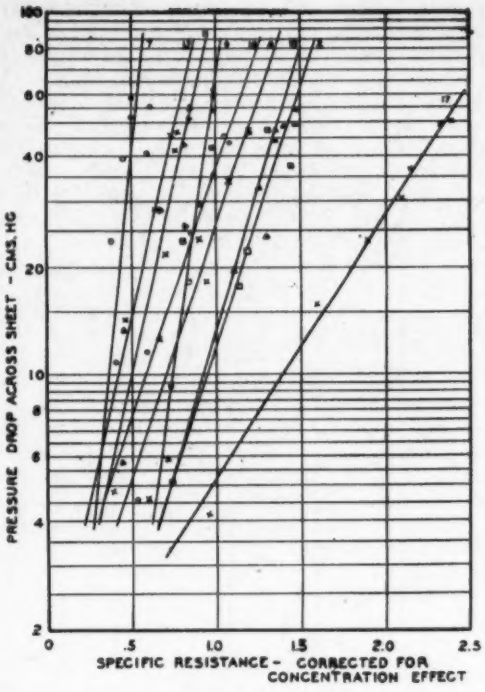

FIG. 3

Relationship between Pressure Drop and Specific Resistance, after Correction for Concentration Effect

In the previously reported work it was found, in the case of the one pulp studied, that the effect of concentration of fiber in the suspension could be accounted for by means of an additional function in the equation, as follows:

$$R_s = \frac{P}{K V W^2 M} s^{-x}$$

The concentration of fiber in the suspension is denoted by s and the value of the function x was found to be 0.45. One of the primary objects of the present study was to check this relationship and determine whether or not it would hold in the case of groundwood pulps, and if so, whether or not the value of x would be of the same order of magnitude. If it should be found that this relationship was of a general nature, the usefulness of the concept of specific resistance would be greatly improved, since tests could be applied to large-scale apparatus which would operate under widely different conditions.

In order to simplify the calculations involved in this study, a nomograph was constructed for solving the specific resistance equation *(1)*. The first step involved simply the calculation of the uncorrected specific resistance, the correction for concentration being omitted until the necessary basic data were

obtained. The final nomograph, including the concentration correction, is shown in Fig. 1. Specific resistance values could be determined rapidly and accurately with the aid of this nomograph.

Every sample of pulp was subjected to two series of tests, in the first of which the weight of pulp used for each sheet was maintained at a constant value while the concentration and the resulting pressure drop varied, and in the second of which the concentration of pulp in the suspension was maintained constant while the weight of pulp and the resulting pressure drop varied. It was assumed that the effect of the weight of the sheet, as such, was adequately taken care of by the original formula so that the data consisted of two series of uncorrected specific resistance results, in one of which the pressure drop was the variable, and in the second of which the concentration and pressure drop were both variables. As a first approximation, the data from the variable concentration series were corrected to a standard pressure differential of 30 cm. Hg by means of data from the variable pressure series. The data from each pulp sample were separately treated in this manner. The resulting data represented the effect of concentration on the specific resistance for each pulp, the effect of the pressure drop having been approximately removed. A log-log plot of the data for several representative pulps is given in Fig. 2.

The slope of a line on Fig. 2 is the value of the coefficient x in the formula given above, representing the approximate effect of concentration on the specific resistance for the given pulp. Although the values calculated for the various pulps are not constant, all show the same general trend and the average slope was determined to be 0.40, which figure may be considered to be representative. It is to be noticed that this value is very near that of 0.45 previously obtained on a sample of alpha fiber, astonishingly close in consideration of the widely different nature of the materials. This evidence is such as to indicate that the concentration effect may well be of a general nature, only slightly dependent on the nature of the pulp involved. If this is the case, and it remains for further work to determine whether or not it is, then the usefulness of the specific resistance concept and determination may be of wide applicability and usefulness, especially valuable in making engineering calculations on filters and forming apparatus used in the industry.

Having thus determined the average value of the coefficient for concentration correction, the next step was to add this correction to the nomograph and to

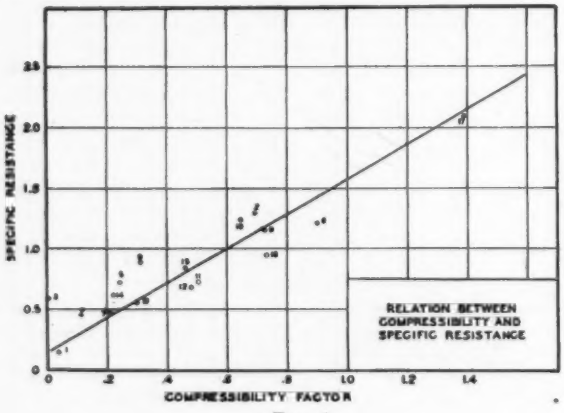

FIG. 4

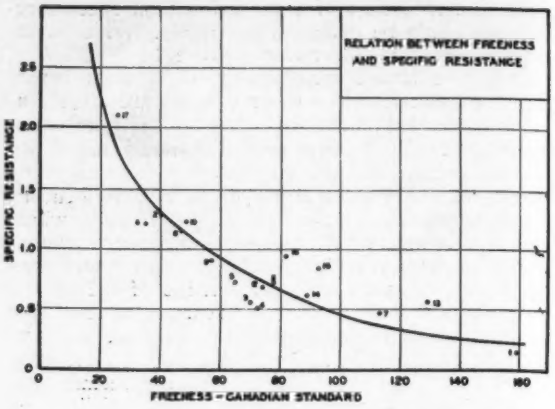

FIG. 5

recalculate all the data on this basis. The nomograph, Fig. 1, includes this correction and was used for these calculations. The resulting data are the values of specific resistance corrected for variations in concentration but still including the effect of pressure drop.

Determination of the Effect of Pressure Drop

It has previously been pointed out that the pressure drop across the sheet during formation would have a marked effect on the specific resistance to the flow of water, due to the fact that fibers are flexible and the pulp mat would deform under the conditions of formation. Thus, as the pressure differential across the forming sheet increases, the pores through which flow is taking place are decreased in size, with a resulting increase in the resistance to flow. This factor, which varies from pulp to pulp, may be called the compressibility and is shown in Fig. 3. In this figure, the data for the specific resistance (corrected for concentration of pulp) are plotted against the pressure drop, the slope of the resulting lines being defined as the "compressibility factor" for the pulp in question. The compressibility factors for the seventeen pulps of this study, as calculated in this manner, varied from a value of 0 for Sample 3 to a value of 1.39 to Sample 17. These variations reflect the varying materials and manufacturing conditions entering into the production of these pulps.

The results for compressibility factors were used in making the final corrections of the specific resistance, and the values given for the various pulps in

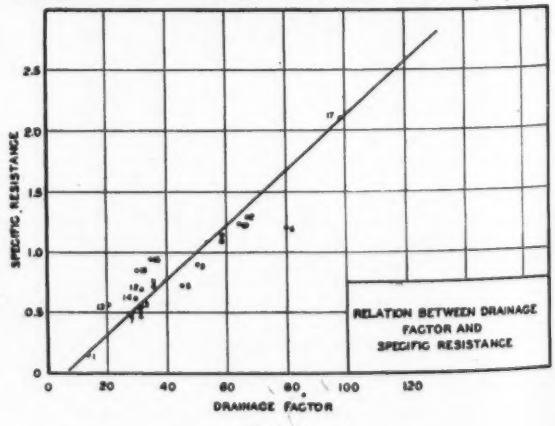

FIG. 6

Table I have been corrected for both concentration and pressure drop, the pressure correction being made to a standard pressure of 30 cm. Hg.

It was to be anticipated that there would be some degree of relationship between specific resistance and the compressibility factor. This is due to the fact that a pulp of fine fibers would have a high specific resistance since the pores in a mat of such fibers would be of small diameter and such fine fibers would also be of a high degree of flexibility which would give rise to a high compressibility factor. Figure 4 shows the relationship actually found between specific resistance and the compressibility of the pulps studied in this work. It is to be seen that the correlation is remarkable, indicating that further work should be done on this relationship. The very high correlation found between these factors indicates that the compressibility is simply another phase of the specific resistance, and that only one of them is significant since the other will bear a direct relationship to it. Further work along these lines is under way.

Relationship of Specific Resistance to Pulp Properties

One of the objects of the study herein reported was to determine the relationship which might exist between specific resistance and other commonly measured pulp properties. For this reason an analysis was made of the correlation between specific resistance and the following: freeness (Canadian standard); drainage factor; bursting strength; tensile strength; porosity; stiffness; tearing resistance; and density. The results are shown in Figs. 5 to 9.

The relationship between the freeness value of the pulps, as measured by the Canadian standard freeness tester, and the specific resistance is given in Fig. 5. It is to be noted that the relationship is distinctly not linear and that in the low range of freeness a relatively small change in the freeness is associated with a relatively large variation in the specific resistance. This correlates well with mill experience that in the case of low freeness pulps a slight change in the freeness may well be associated with a marked change in the character of the pulp.

The drainage factor, TAPPI Standard T 205 m, gives a remarkably close correlation with specific resistance, as shown in Fig. 6. This checks with results previously reported *(2)* and indicates that the drainage factor and specific resistance measure the same pulp property.

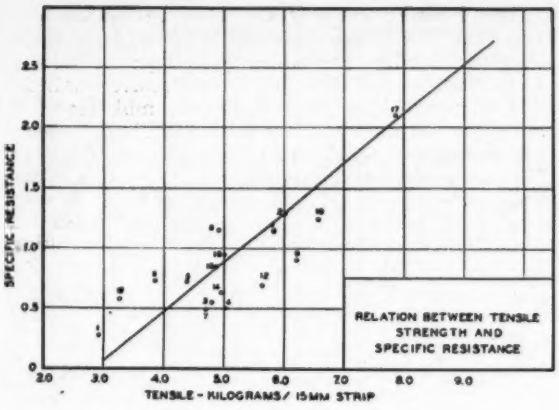

FIG. 8

Specific resistance has a reasonably good correlation with bursting strength, tensile strength and porosity, as shown in Figs. 7, 8, and 9. The correlation obtained between specific resistance and tearing resistance, stiffness, and density were negligible.

Conclusions

The work herein reported has shown that the specific resistance may be used as a measure of the drainage properties of mechanical pulps and holds considerable promise in engineering calculations on the capacity of filters and forming machines handling this type of pulp. The concentration coefficient for mechanical pulps is very similar to that of the alpha pulp previously tested, which is evidence that a common coefficient may be applicable to all types of pulp. Further work is required before this may be considered to be demonstrated but the present evidence suggests it as a possibility. In any case, the concentration effect may be readily calculated by means of a nomograph, as was done in this work, making the calculations simple and suitable for mill control work.

It was shown that the compressibility factors for the seventeen mechanical pulps tested were directly related to the specific resistances of those pulps. This suggests that the compressibility may be a secondary phase of specific resistance and that a separate function to describe this pulp property may not be needed. Further work is now being done which may provide the necessary evidence on this point.

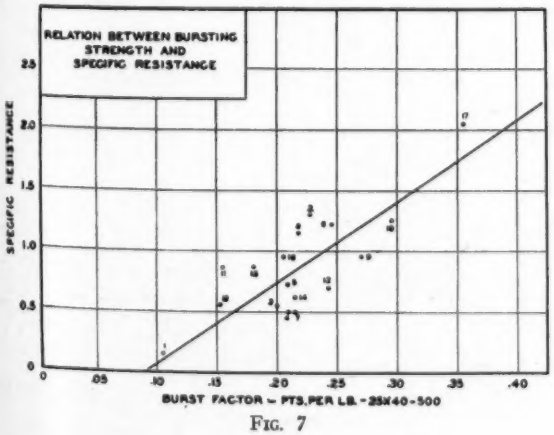

FIG. 7

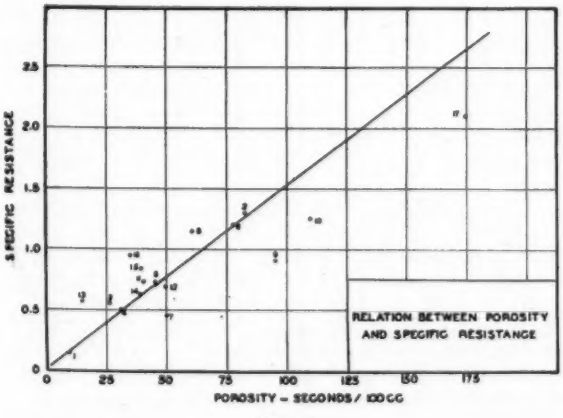

FIG. 9

The freeness test was shown to be relatively insensitive in the low range, while the specific resistance test is very sensitive in this range. This factor should tend to make the specific resistance a valuable control test in the mechanical pulp mill, especially since the test may be made in a very short time and all calculations may be made with the aid of a chart. The drainage factor was shown to be directly related to specific resistance, indicating that both of these tests measure the same pulp property.

Specific resistance was shown to be related to the bursting strength, tensile strength, and porosity of the pulp sheets, while little or no relationship was found with the tearing resistance, stiffness, or density.

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(2) Hisey, W. O. and Heigl, C. H. "The drainage resistance of papermaking pulps." *Paper Trade J.* 110, no. 6:34-40 (Feb. 8, 1940); *Tech. Assoc. Papers* 23:640-647 (June, 1940).

Build New Dry Dock at Orient Bay

On May 15, 1940, eighty-six years after the first installation of a Crandall type of railway dry dock in East Boston, Mass., work was begun at Orient Bay, Ontario, by Crandall Dry Dock Engineers, Inc., of Cambridge, Mass., on a 300-ton railway dry dock for the Abitibi Power and Paper Company of Toronto, Ont. Only nine weeks later, on July 15, 1940, this new railway dry dock serviced its first vessel at Orient Bay.

Orient Bay is located on Lake Nipigon. The Abitibi Power and Paper Company draws its supplies of pulpwood from logging operations to the north of the lake. Immense booms are assembled at the northern end of the lake and towed by powerful tugboats to the mouth of the Nipigon River at the southern end. But the Nipigon River,—which incidentally, provides some of the best trout water in all Canada,—is a shallow unnavigable stream, so the logs must be floated down the Nipigon to Lake Superior.

Because of this land-locked condition of Lake Nipigon, the tugboats, weighing 270 tons, were of necessity built on the lake, at Orient Bay. And, after several years of hard service, they required dry docking for inspection and repairs. When it was therefore decided to construct this 300-ton railway dry dock at Orient Bay, similar to the one installed at Iroquois Falls in 1935, Crandall Dry Dock Engineers, Inc., were again assigned the problem of design and the task of construction.

After study it was decided to construct this 300-ton railway dry dock on the ways originally used for building the two tugboats, with the tracks extending beyond the old launchways. And the cradle was designed so that vessels may be moved over transversely, thus allowing several craft to be repaired at one time. Thus the facilities can be put to full use during the long winter season when the fleet is out of commission.

The track is 341 feet long. It is laid down on a uniform gradient and is of the two-way type. The inner two hundred foot length of track is supported by the old launchways, the balance by spruce piling. After driving these piles to adequate penetration and resistance in the sand subsoil, they were cut accurately to the prescribed gradient by divers. Then the track was sunk in place, accurately aligned and fastened to the piling.

The cradle moves on a system of free rollers. These run between flat steel rail plates which are fastened to the bottom of the cradle runners and to the top of the tracks. It is operated by a single open-link hauling chain and a steam hauling machine sufficiently powerful to dry dock a capacity load in fifteen minutes.

Four sliding bilge blocks on each side of the cradle are operated by chains and hand winches located on the docking platform. The latter is placed on the port side of the cradle and supported by braced uprights fastened to the transverse beams. General dimensions are as follows:

Length of cradle over keel blocks	78 feet
Length of cradle overall	84 feet
Width of cradle	33 feet
Depth of water over keel blocks, forward	6 feet
Depth of water over keel blocks, aft	9 feet

Meeting at Orono, Maine

There will be a joint meeting of the Maine-New Hampshire Group of the Technical Association of the Pulp and Paper Industry and the Maine Section of the American Chemical Society at the University of Maine on September 26 and 27, 1941.

A feature of the meeting will be the dedication of the new wing to Aubert Hall, the building that has housed the Department of Chemistry and Chemical Engineering since 1914. This will provide additional facilities for the teaching of pulp and paper technology.

At 2:00 P.M. of Friday, September 26th there will be a brief business meeting in Aubert Hall followed by the presentation of two papers, one by Professor Nolan on "Pulp and Paper Application of Chemical Engineering Research at the University of Maine" and the other by Professor Dwight Demeritt on "Forest Resources for the Pulp and Paper Industry".

The dedication of the new building will be at 4:30 P.M. and will be followed by a banquet at 6:00 P.M. in Esterbrook Hall. The speaker will be Dr. Furnas of Yale University who will talk on "The Storehouse of Civilization, Utilizing our Natural Resources".

Saturday morning will be given over to two discussion groups, the first on the subject of "Bleaching and Chlorine Usage" under the direction of R. N. Miller of the Oxford Paper Company and the second on the "Availability and Suitability of Raw Materials for Use in Pulp and Paper Manufacture" to be led by T. M. Barry of Fraser Paper Ltd.

This will be followed on Saturday by the Maine-Rhode Island football game. Housing facilities will be available in Bangor at the Bangor House and the Penobscot Exchange Hotel.

Issues New Krebs Handbook

Publication of the fourth edition of the Krebs Handbook of White Pigments is announced by the Krebs Pigment and Color Corporation, 1007 Orange street, Wilmington, Del. This new enlarged 8½" x 11" edition contains a complete compilation of facts and data on all of the Krebs white pigments, including titanium dioxide, extended titanium pigments, and lithopones. Physical and chemical characteristics and recommended fields of use are described, as is also the interrelationship between the various grades of pigments, which may facilitate simplification of formulation.

The handbook is being distributed to manufacturers of paper and other products.

Effect of Tannins on Alkaline Pulping*

By John Wm. Bard[1]

Abstract

The effect of chestnut tannin in alkaline pulping was studied. It was observed that the color in sulphate pulps can be reproduced on white alpha pulp by the condensation product resulting from the digestion of tannin and nonresistant carbohydrates in white liquor. Tannin by itself or the combination of tannin and lignin did not prove capable of producing a depth of color approaching that of normal kraft pulp. Pulping operations carried out on nontannin woods, with and without the addition of tannin, and on extracted and unextracted chestnut wood, demonstrated that where tannin is present a much darker pulp will be secured. Digestions carried out with and without sodium sulphide in the liquor gave black liquors and pulps of similar spectral absorption characteristics, indicating that no sulphur-dye formation occurs between the tannin and the sulphide.

The presence of tannin gave pulps which were more difficult to bleach beyond a given degree of whiteness than pulps prepared from tannin-extracted wood. Tannins exert a buffering action during digestion and require more chemical for pulping but give a pulp with marked higher strength properties.

Introduction

The effect of tannins in kraft pulping is still obscure. Much of the previous work has not dealt primarily with tannins, but they have often entered into the discussion of the results obtained in research work. It was the purpose of this work to use tannin and tannin-containing materials and ascertain their influence in sulphate pulping by direct measurements.

The investigations of Kuettel *(1)* and Holzer *(2)* are among the first to point to tannin and phlobaphene materials as a possible cause of kraft color. Kuettel obtained an extract from kraft pulp which he believed to be an oxidation or condensation product of a phlobotannin. Holzer isolated a colored material from both kraft pulp and kraft black liquor, and concluded that this was derived from the phlobotannins in wood. He believed that kraft color was due to a sulphur dye of the phlobotannin and that the color of soda pulps was due to the material which would form a sulphur dye if sodium sulphide were used in the cooking liquor. Graef *(3)* concluded from his work that the tannins are not responsible for kraft color and believed that the color resulted from carbohydrate degradation products.

Holzer further believed that the difficulty encountered in bleaching kraft pulp is due to these sulphur-phlobaphene dyes. Wells *(4)* has suggested that the difficulty in kraft bleaching is due to the presence of coloring matters, small in amount but of high tinctorial power. Buttrick *(5)* has noted that pulps secured in commercial conversion of chestnut are hard to bleach because of the high tannin content of this wood.

Contrasted with the belief that tannin derivatives are responsible for the high bleach requirement of sulphate pulps is the conclusion of Hanson *(6)* that there is no evidence to support the sulphur dyestuff theory of kraft coloring matter; he found a linear relationship between the lignin content and bleach consumption of sulphate pulps. Jayme and his associates *(7)*, investigating the relative bleachability of sulphate and soda pulps from beechwood, found that the kraft bleached more readily, and concluded that sulphur-phlobaphene dyes were not present. More recently, Schwartz, McCarthy, and Hibbert *(8)* indicate that lignin and lignin degradation products are the primary cause of the difficulty in bleaching sulphate pulps.

Aside from the controversy over the cause of the brown kraft color and the high bleach requirements of sulphate pulp, little interest has been shown in the possible effect of tannin on the alkaline pulping operations. Buttrick noted that no apparent difficulty is encountered in pulping chestnut wood from which a major part of the tannins has been removed.

Chestnut Pulping Experiments

Since the primary concern of this work was to determine the effect of tannins on the alkaline pulping operation, a raw material high in tannin content was desired. Chestnut *(Castanea dentata)* answered this requirement admirably, and was used for the pulping experiments involving a high tannin wood. The specimen which was selected contained 9.36% tannin as determined by the hide-powder method *(9)*. An alcoholic extraction of the wood gave 1.56% phlobaphene, 8.06% tannin, and 2.32% nontannin.

Chestnut tannin in a purified form was prepared by alcoholic extraction of the wood, replacing the alcohol with water through vacuum distillation, filtering, and then to remove phlobaphene, stripping the tannin materials from the aqueous solution with ethyl acetate. This ethyl acetate fraction had a tannin content of 71.8% and a nontannin content of 28.2% as determined by the hide-powder method. Wilson *(10)* noted that many nontannins are so closely related to tannins that they act as tannins after drying, and it is possible that most of the above percentage of nontannin was tannin-like in nature.

In addition to the chestnut wood, black spruce and loblolly pine sapwood, which were found to contain little or no tannin, were used in several experiments.

A large number of digestions were required wherein the color of the resulting pulp was the only interest. This work was facilitated by the use of 40-cc. glass phials, four of which could be cooked at one time in a 400-cc. autoclave using cooking liquor as the medium of heat transfer. The wood digested in these glass phials was 40-65 mesh sawdust. In these small scale digestions a 3-hour cook was employed, using 1 hour to reach 176 deg. C. and keeping it at this maximum for 2 hours. The kraft liquor used in these digestions had a sulphidity of 32.1% and a total chemical concentration of 3.6% calculated as sodium hydroxide.

Digestions with chips were made in a 10-pound digester equipped with a circulating pump and in-

* A portion of a thesis submitted in partial fulfillment of the requirements of The Institute of Paper Chemistry for the degree of Doctor of Philosophy from Lawrence College, Appleton, Wis., June, 1940.

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direct steam heat and were carried out with a liquor of 33.3% sulphidity. The liquor-to-wood ratio was 5.5:1. A 4-hour cooking schedule was followed (1 hour to reach 176 deg. C., and 3 hours at this maximum temperature). At the end of the digestion, the pressure was relieved to 50 pounds per square inch, the cook blown, and the pulp washed with hot water. After draining overnight, it was screened on a 10-cut (0.010 inch) plate and the yield determined.

All experimental bleachings were made on a small scale, using 1-quart glass jars for hypochlorite bleaching and glass beakers for chlorination and caustic extraction. Single-stage hypochlorite bleachings were made on 10-gram (moisture-free) samples at a consistency of 1.25% and a temperature of 40 deg. C. In multistage bleaching, a 50-gram (moisture-free) sample was used. Fifty per cent of the bleach required was added as chlorine in the first stage at 2% consistency and allowed to exhaust at room temperature. In the caustic extraction stage, 1.3% sodium hydroxide on the basis of the moisture-free pulp was allowed to act for 2 hours at room temperature and at a consistency of 5%. The third stage was carried out with hypochlorite in the manner described for single-stage bleaching; 40% of the theoretical chlorine requirement was added in this stage.

Brightness of pulps was measured by the General Electric reflectance meter, and spectral reflectance was determined with the G. E. recording spectrophotometer. Evaluation of pulp quality (bursting, tear, and MIT folding endurance) was made according to the TAPPI Standard T 200 m-40.

A glass electrode was used in electrometric titration of the black liquors for residual chemical. Color absorption properties of the liquors were determined with the recording spectrophotometer.

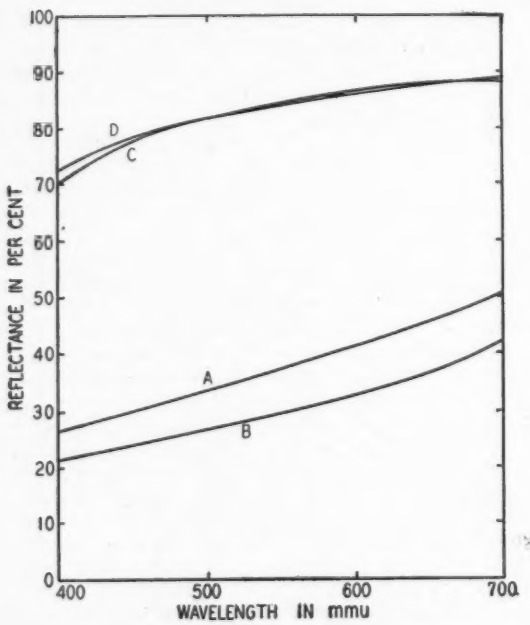


FIG. 1

Absorption of Color From Cooking Liquor. A—Alpha Pulp Cooked in Black Liquor. B—Pulp from which Black Liquor Was Secured. C—Uncooked Alpha Pulp. D—Alpha Pulp Cooked in White Liquor.

Effect of Tannin on the Color

The coloring matter in sulphate pulps has been the subject of much controversy, and for this reason, the influence of tannin on the color of pulp was given primary consideration in this investigation. Preliminary digestions using the 40-cc. glass phials demonstrated that normal kraft colors could be secured in such equipment. Since the small scale digestions afforded a definite saving in time and materials, they were employed in this part of the investigation unless otherwise specified.

As an approach to the determination of the wood component or combination of components responsible for the brown color of kraft pulps, it was desired to synthetically produce such a color by digesting a purified cellulose fiber—a commercial alpha-cellulose—and isolated wood constituents with kraft white liquor. Examination of the pulp after digestion and thorough washing should indicate which of the common wood constituents is responsible for the characteristic kraft color.

Before carrying out these experiments, it was necessary to determine whether the color results from materials absorbed from the black liquor, or insoluble materials not removed from the fiber during cooking. A sample of the alpha pulp was digested for 3 hours in black liquor from chestnut pulp (2 hours at a maximum temperature of 176 deg. C.) and the resulting pulp was washed thoroughly. The color of the washed pulp was dark, although slightly lighter than that of the chestnut pulp from which the black liquor was obtained. Spectral reflectance of the black-liquor-treated (Curve A) and the normal kraft (Curve B) pulps are shown in Fig. 1. It is apparent from the color of the alpha pulp that kraft color may be produced by absorption of the coloring matters from the black liquor.

In order to show that the cellulose itself was not responsible for the color, the alpha pulp was digested in kraft white liquor. The spectral reflectances of the original alpha pulp (Curve C, Fig. 1) and of the alpha pulp digested in white liquor (Curve D) were essentially the same. Hence the cellulosic portion of the wood alone does not produce the kraft color.

Digestions of alpha pulp and kraft white liquor with one added wood constituent were next undertaken. Chestnut, tannin, and phlobaphene, respectively, each amounting to 10% on the basis of the pulp, gave colors much lighter than those of normal kraft pulps, as shown in Fig. 2, Curves A and B. The addition of Willstätter lignin in amounts up to 25%, likewise resulted in only a slight coloration of the pulp (Curve C). None of these phenolic materials added as individuals proved capable of producing a depth of color approaching that of kraft pulp.

Carbohydrates, less resistant to chemical action than cellulose, were next examined for their influence on kraft color. Four carbohydrates—starch dextrin, glucose, xylan, and xylose, each in an amount of 50% of the alpha-cellulose (approximately 20% of the original wood)—were digested with the alpha pulp and white liquor. The spectral reflectance curves (D, E, F, and G in Fig. 2) indicate that the monosaccharides gave much the greater darkening. In no case, however, was the depth comparable to that of the artificial kraft pulp (Curve H).

Since none of the added materials was capable of

producing depths of color comparable to those found in kraft pulps, these digestions indicate that no single material is responsible for kraft color. With the single exception of lignin, all of these materials were prepared under mild conditions and could not have been appreciably altered during the isolation procedure. In the case of lignin, which was prepared by the fuming hydrochloric acid method, some change was suffered during isolation. In this regard Ahlm *(11)* found the sulphur derivative of lignin, such as would occur in kraft pulping, to be of a cream color.

The next possibility was that the color might be caused by combinations of materials either through their additive effect or through actual chemical combination to produce a new substance. Accordingly, digestions similar to those described above were made with combinations of these isolated wood constituents, each individual constituent being held to the amount used in the above digestions.

The use of combinations of these added materials in amounts individually equal to those used in the previous digestions makes possible the theoretical calculation of the pulp color to be expected for such combinations. This is accomplished through the use of coefficients giving the ratio of absorption to scattering of light (k/s) for a given pulp reflectance. The equation used is,

$$(k/s)_{123} = (k/s)_{12} + (k/s)_{13} - (k/s)_1,$$

where $(k/s)_{123}$ is the coefficient for the pulp colored by two materials, $(k/s)_{12}$ that for the pulp plus one coloring material, $(k/s)_{13}$ that for the pulp plus the other coloring material, and $(k/s)_1$ that for the uncolored pulp. Derivation of the equation from the Kubelka-Munk formula and application to pulp color problems has been published by Nolan *(12)*.

Since the reflectance and therefore the k/s values of the pulp cooked with two components could be

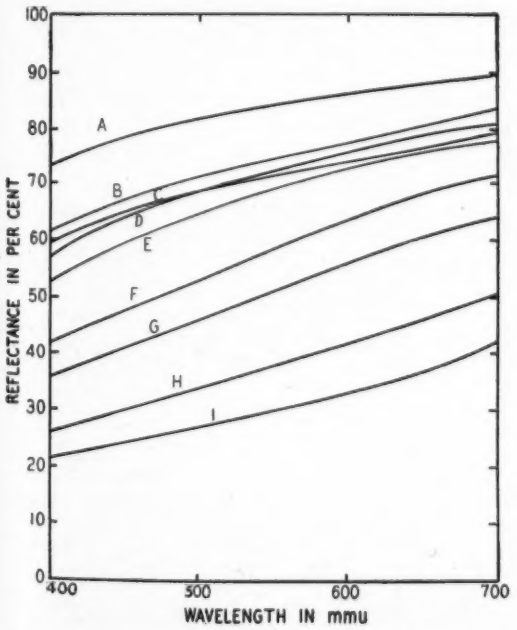


FIG. 2

Color of Alpha Pulp Cooked with an Added Material. A—Alpha Pulp Cooked in White Liquor. B—Alpha Pulp and Chestnut Tannin. C—Alpha Pulp and Spruce Lignin. D—Alpha Pulp and Starch Dextrin. E—Alpha Pulp and Xylan. F—Alpha Pulp and Glucose. G—Alpha Pulp and Xylose. H—Alpha Pulp and Black Liquor. I—Pulp from which Black Liquor Was Secured.

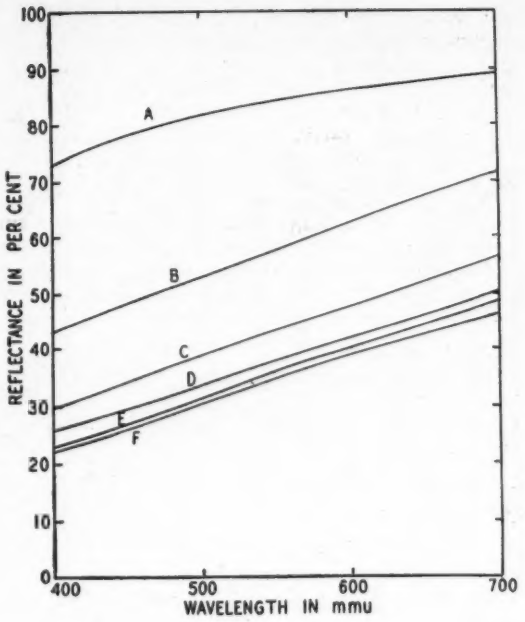


FIG. 3

Color of Alpha Pulp Cooked with Two Added Materials. A—Alpha Pulp Cooked in White Liquor. B—Alpha Pulp with Chestnut Tannin and Spruce Lignin. C—Alpha Pulp with Chestnut Tannin and Xylan. D—Alpha Pulp and Black Liquor. E—Alpha Pulp with Chestnut Tannin and Glucose. F—Alpha Pulp with Chestnut Tannin and Xylose.

determined experimentally, it is possible to compare theoretical and actual k/s values for such a pulp. If there is any considerable divergence between the actual and theoretical k/s values, some reaction influencing the color must have occurred between the added wood constituents. In the subsequent work, the ratio of the measured k/s value to that theoretically calculated has been given for combinations of materials. Where this ratio is greater than unity, the color of the pulp is darker than indicated by theory.

The first digestion, wherein two added components were cooked with alpha pulp and white liquor, was carried out with a tannin-lignin combination. The depth of color was greater than for either component and was actually somewhat greater than for the additive effect of the individual components, since the ratio of the actual to the theoretical k/s values varied from 1.81 to 1.47 in going from 400 to 700 mμ. That the color was still much lighter than that of the artificial kraft pulp may be seen from the spectral reflectances given in Fig. 3, Curves B and D.

The combination of lignin with each of the four carbohydrates — starch dextrin, glucose, xylan, and xylose — also gave a pulp of color much lighter than that of kraft pulp. The maximum deviation of the ratio of actual to theoretical k/s values from unity was found in the k/s value of 1.90 for the lignin-glucose combination. Whereas a light brown color was secured, the reflectance was higher than that of most kraft pulps.

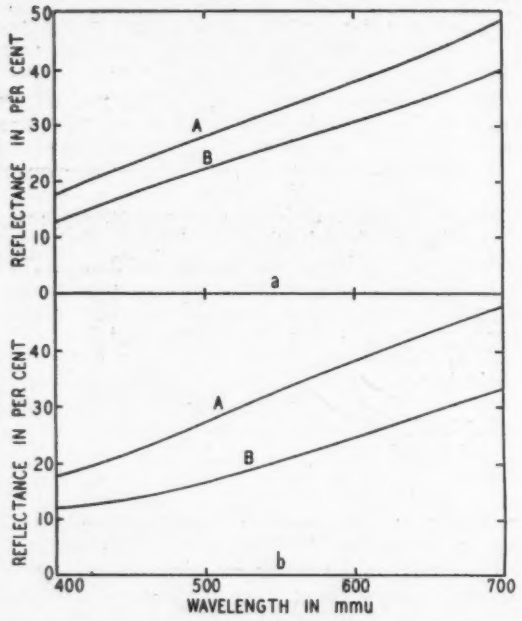
The digestions involving combinations of tannin with the nonresistant carbohydrates were most effective in producing a dark color on alpha pulp, and of these, the monosaccharides were more effective than the polysaccharides. As may be seen in Fig. 3, tannin in combination with xylose and with glucose

gave pulp colors deeper than those of alpha pulp digested in black liquor (Curves E, F, and D). The ratio of the actual to theoretical k/s values in the case of glucose and tannin varied from 2.97 at 400 mμ to 4.03 at 700 mμ; in the case of xylose and tannin the ratio varied from 2.09 at 400mμ to 2.61 at 700 mμ. In both cases, the reflectance was much below that theoretically expected. It is of interest to note the parallelism between these two spectral reflectance curves and the curve for alpha pulp cooked in black liquor. While it is obvious that amounts of monosaccharide such as used here would not be found in wood, the trend is none the less significant.

The same increased color formation was found for the xylan-tannin digestion and to a lesser extent for the dextrin-tannin combination. The spectral reflectance of the pulp from the tannin-xylan digestion, shown by Curve C, Fig. 3, is only slightly above and of the same shape as that of the artificial kraft (Curve D). The ratio of the actual to theoretical k/s values varied from 2.97 at 400 mμ to 4.03 at 700 mμ, again indicating a reaction between the tannin and probable sugar degradation products.

The trend observed in this work necessarily leads to the conclusion that, where tannin is present in a wood being pulped, a much darker color is to be expected than would result in its absence. While the exact nature of the reaction between the sugar and the tannin was not determined, it is believed that it may be the familiar phenol-aldehyde type of condensation, wherein the tannins furnish the phenolic groups and the sugars the aldehydic groups. Alkaline mediums are frequently used to carry out such reactions commercially.

Since it appeared that tannins have a noticeable influence on the color of kraft pulps, the next step was the comparable digestion of nontannin and



FIGS. 4A AND 4B

FIG. 4A—Color of Loblolly Pine Pulp. A—Pulp without Added Tannin. B—Pulp with Added Tannin. FIG. 4B—Color of Black Spruce Pulp. A—Pulp without Added Tannin. B—Pulp with Added Tannin.

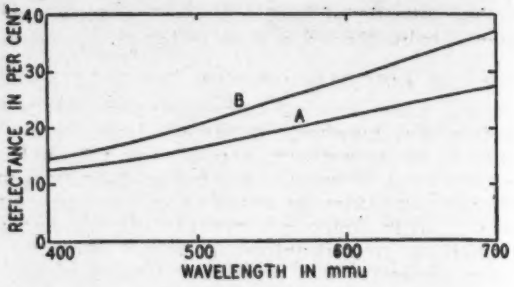


FIG. 5

Effect of Tannin Extraction on Pulp Color. A—Unextracted Chips. B—Extracted Chips.

tannin-containing woods. Spruce and loblolly pine sapwood meal were each digested with and without added tannin. The tannin added in the spruce digestion was 7% of the wood; that in the pine digestion was 11%. With the added tannin, an increased amount of kraft liquor, determined experimentally, was used to offset the amount of alkali required by the tannin. The color of the resulting pulps, given by the spectral reflectance curves in Figs. 4a and 4b, was much deeper in both cases where the tannin was present. Thus, in kraft cooking, a much darker colored pulp will result where tannin is present.

That this is true, regardless of whether or not sulphide is present in the alkaline digesting liquor, was shown by digesting sprucewood meal in soda cooking liquor with and without added tannin. Despite the absence of sulphide, a much darker pulp was again secured where tannin was present. In other words, the tannin does not require the presence of sulphide to produce the darkening effect.

Mixtures of tannin and soda liquor, and of tannin and kraft liquor chemically equivalent in amount to the soda liquor, were each heated to 176 deg. C. and allowed to cool. Examination of the resulting black liquors showed them to have similar spectral absorption characteristics. If the tannin formed a dye with the sulphide, either a change in depth of color, a variation of shade, or both might be expected, and since none of these effects was observed, it may be concluded that the sulphide does not influence the color-forming properties of the tannins.

The converse of the above procedure, the removal of tannin from a high-tannin wood, should result in a lighter colored pulp if tannin actually influences the kraft color. For this purpose chestnut chips were first extracted with ethyl alcohol and then with water. The colors of the kraft pulps from unextracted and extracted chips pulped to the same lignin content in a 10-pound digester showed that the removal of most of the tannin resulted in a somewhat lighter pulp (Fig. 5). The failure to secure a more pronounced brightening may have been due to tannin not removed by extraction. It was found that by distintegrating the extracted chips to pass a 40-mesh screen, an additional 1.44% of material was rendered extractable. It is probable that some tannin may have been present in the form of insoluble tannates.

It can be concluded that the tannins are instrumental in producing a dark color in alkaline pulps, and that when present in a wood, they will cause the pulp to be much darker than it would be in their absence. The color-forming material appears to be a

combination of the degradation products of the non-resistant carbohydrates and tannins in the wood. The tannins alone produce little darkening.

Effect of Tannins on the Bleaching of Kraft Pulp

Small scale bleaching methods were used for the experimental bleaching of these pulps. Increasing amounts of hypochlorite were allowed to bleach to exhaustion at 40 deg. C., using pulps from both unextracted and extracted chestnut cooked to the same lignin content (approximately 2% residual lignin), as well as an unextracted chestnut cooked to a higher lignin content (6.4% residual lignin).

Curves A and B in Fig. 6, showing the variation of brightness with the amount of bleach liquor used, indicate that below 70% reflectance, the tannins present in chestnut wood had no observable effect on pulp brightness. A difference in lignin content, however, had a great influence on bleach requirement, as shown in Fig. 6, Curve C.

Above 70% reflectance, however, the tannins appeared to exhibit a noticeable influence on bleachability. Reference to Curves A and B in Fig. 6 shows that the pulp from the unextracted wood gave a lower brightness for a given amount of bleach than did the pulp from the extracted wood. It would appear from this, that high white pulps will be difficult to obtain from wood high in tannin.

In order to check this apparent trend, a 3-stage bleaching procedure—chlorination, caustic extraction, and hypochlorite bleaching—was carried out in parallel on pulp from the unextracted and extracted woods pulped to the same lignin content (2.21 and 2.09% lignin, respectively). The pulp from the extracted wood attained a brightness of 83.3%; that from the unextracted wood reached a brightness of 79.6% with the same amount of bleaching material. Again, the pulp from the high tannin wood gave a much lower brightness with a given quantity of bleach, which verified the findings of the single-stage bleachings.

These bleaching experiments show that whereas tannin residues have little effect in bleaching operations where pulps are bleached to low brightness values, they have a deleterious effect where higher whites are desired, and require more bleaching chemical to attain a given pulp brightness.

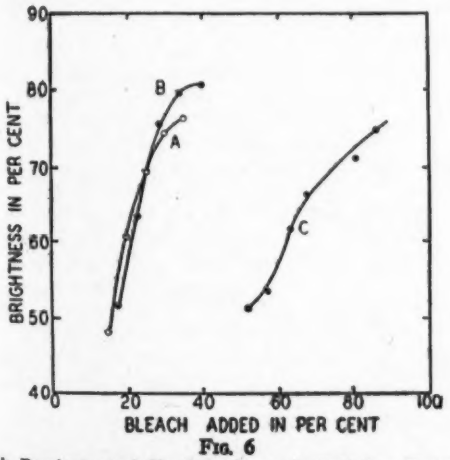


FIG. 6

Bleach Requirement of Chestnut Pulps. A—Pulp from Unextracted Wood. B—Pulp from Extracted Wood. C—Pulp from Unextracted Wood Cooked to a Higher Lignin Content.

Effect of Tannins on Pulp Quality

A third possible influence of tannins in kraft pulping is the effect of these materials on the pulping operation and on physical characteristics of pulps other than color. As tannins enter into the pulping reactions and produce a difference in color of the pulp, they may influence the course of the reaction and the strength of the resulting pulp.

Before pulping a tannin-containing wood, unextracted spruce chips and spruce chips extracted to a residual extractive content of 0.64% were digested under identical conditions. The resulting pulps were found to be cooked to the same degree, and no difference was found in their strength characteristics. Accordingly, it is apparent that in the absence of tannin materials, the extraction process itself had no effect on the subsequent pulping operation.

Unextracted and extracted chestnut chips (1.44% residual extractive) were then cooked under identical conditions with the same amount of chemical (22% as sodium hydroxide on the basis of the wood). The lignin content of the pulp from the unextracted wood was 6.37% as compared with 1.91% in the case of that from the extracted wood. The yield and bleach requirement data, given in Table I, indicated that pulp from the extracted chips was cooked to a much greater degree. Analysis of the black liquor showed that, despite the greater degree of digestion in the case of the extracted wood, a higher residual chemical was encountered. Apparently, the tannin in the unextracted wood had reacted with and bound a considerable portion of the cooking alkali. Since tannins are of a phenolic nature, such a reaction might be anticipated.

Using the chemical consumption experienced in these digestions as a guide, several digestions on unextracted chestnut chips were made with increased amounts of chemical, two of which resulted in lignin contents just above and just below that of the pulp from the extracted wood. In attaining this degree of cooking, the chemical ratio had to be increased from 22% to 26 and 28%, respectively.

The data on the resulting strength characteristics, given in Table I, show the pulp from the unextracted wood to be much better in quality than that from the extracted wood. The bursting strength of

TABLE I.—CHARACTERISTICS OF PULPS FROM UNEXTRACTED AND EXTRACTED CHESTNUT WOOD

	Extracted	Unextracted	Unextracted	Unextracted
Chemical used, % as NaOH	22	22	26	28
Lignin, %	1.91	6.37	2.21	1.63
$KMnO_4$ no.	17.6	29.8	17.9	17.7
Screened yield, %	39.60	13.46	39.25	38.50
Unscreened yield, %	39.66	45.32	39.37	38.55
Max. burst, points/100 lb.	83	93	107.1	101.6
Strength at 450 cc. freeness				
Burst, points/100 lb.	81	93	104.0	100.5
Tear factor	0.87	0.87	1.04	0.90
Double folds	460	1270	1550	1420
Beating time to 450 cc. freeness, min.	63	58	54	68
Residual chemical				
g./liter	4.49	1.47	6.61	7.61
% of starting chemical	11.2	3.6	13.97	14.94

the pulp from the unextracted wood was 20% higher than that from the extracted wood. The folding endurance and, to a lesser extent, the tearing resistance follows the same trend.

The black liquor from each of the pulps was analyzed by electrometric titration. and a much

stronger buffering effect was found in the liquor from the unextracted wood. Apparently, the tannin materials had combined with the strong initial concentration of cooking chemicals, and had again released these chemicals as the portion remaining unreacted was consumed in the delignification of the wood. This avoided strong concentrations of inorganic chemicals during the digestion, resulting in decreased degradation of the pulp and a maintenance of strength properties.

The tannins, therefore, have opposing influences in the pulping operation. They require more chemical for digestion, and yet they give a better pulp from the standpoint of strength. Considerable differences are exhibited between the strengths of pulps from unextracted and extracted woods in the data presented above. Since the chestnut wood was selected for its high initial tannin content, these differences might be expected to be correspondingly smaller in woods of lesser tannin content.

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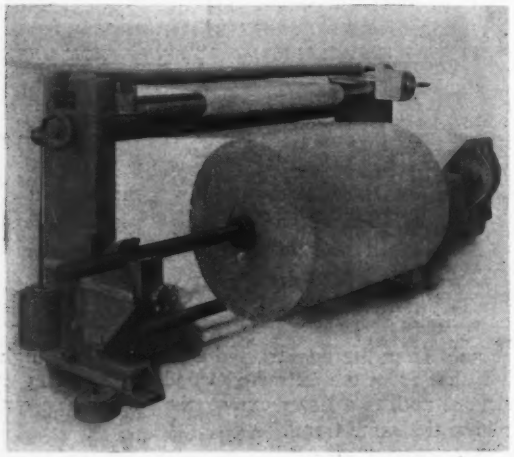
(10) Wilson, John Arthur. "The chemistry of leather manufacture." 2d ed., vol. 1, especially p. 456-477. New York, Chemical Catalog Co., 1928. 495 p.
(11) Ahlm, Carl E. Unpublished work, The Institute of Paper Chemistry, 1940.
(12) Nolan, Philip, *Tech. Assoc. Papers* 20:336-339 (June, 1937); *Paper Trade J.* 105, no. 14:42-45 (Sept. 30, 1937).

New Uniform Tension Unwinder

Positive means for assuring continuous uniform tension on a web of material being unwound from a parent roll has been sought since the earliest use of continuous production or processing methods with paper, board, fabric, rubber, etc. The Johnstone Engineering and Machine Company, of Downingtown, Pa., has solved this problem by a new, unique combination of tried and proven engineering principles. It modernized the conventional unwind stand and incorporated hydraulic brakes, like those used in automobiles; then it went one step further and made the hydraulic brakes automatically operated, by means of oil filled bellows, like those used for remote control in various industries.



New Unwinder With Auto-Hydraulic Brakes

The Johnstone Uniform Tension Unwinder consists principally of a nerve roll and a hydraulic brake, automatically operated and coordinated by a tensioneer (oil filled bellows and piping system). In operation, a loop in the travelling web is always pulling the nerve roll in the opposite direction to the pull of the springs or weights on the roll, thus any variation in the pull or tension immediately causes the sensitive nerve roll to move forward or back, in its horizontal tracks. The slightest movement of the nerve roll is transmitted to the hydraulic brake by the tensioneer, thus, if the web tension should tend to be greater than the "pre-set" value, the brake friction is automatically released the corresponding amount and, if the web tension should tend to slacken, more brake friction is automatically applied. All this is done instantly and entirely by the machine, without any attention or adjustment, after the tension is once set by the weights or springs pulling on the Nerve Roll. The machine practically "thinks for itself". The brake controls the unwinding roll and the physical condition of the unwinding roll controls the brake. Uniform tension is thus maintained, regardless of the speed or diameter of the unwinding roll.

Air cooled hydraulic brakes are used on this machine when handling light and medium weight papers, fabrics, imitation leathers, rubber, rubberized fabrics, etc., used in converting, waxing, coating, embossing, printing, etc., and water cooled brakes when handling boards up to 20 points thick and correspondingly heavier other materials. Standard machines take rolls from 32 to 92 inches wide. Operating speeds depend on the material and width, the maximum for the Air Cooled Type being 700 f.p.m. and for the water cooled type, 1500 or 2000 f.p.m. Literature describing this machine is available by writing the manufacturer.

Simplified Practice for Boxes

The Standing Committee in charge of reviewing and revising Simplified Practice Recommendation R146-38, Corrugated and Solid Fiber Shipping Boxes for Canned Fruits and Vegetables, has approved a revision of the recommendation, and the Division of Simplified Practice of the National Bureau of Standards has mailed copies to canners, box manufacturers, and others interested, for consideration and approval.

The original draft of this recommendation, which was promulgated in 1933, established a simplified schedule of recommended inside dimensions for boxes in which to handle the sizes of cans recognized as standards by the canning industry. In 1938, this recommendation was revised to provide a simplified list of sizes of boxes for packing the current standard can sizes. The revision now proposed includes recommended sizes for boxes to be used in handling the 41 sizes of cans recently adopted as standards by the canning industry and trade and promulgated in Simplified Practice Recommendation R155-40, Cans for Fruits and Vegetables.

Mimeographed copies of the proposed revision of R146-38 for Can Boxes may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard; Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING SEPTEMBER 13, 1941

SUMMARY

Cigarette paper .....10 cs.
Newsprint .....11,481 rolls

CIGARETTE PAPER

Garcia & Diaz, ——, Barcelona, 10 cs.

NEWSPRINT

H. G. Craig Co., Inc., ——, Donnacona, 371 rolls.
International Paper Co., ——, Gatineau, 337 rolls.
——, ——, Comeau Bay, 8,076 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 414 rolls.
International Paper Co., ——, Gatineau, 331 rolls.
——, ——, Cornerbrook, 1,592 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 360 rolls.

RAGS, BAGGINGS, ETC.

National City Bank, ——, Buenos Aires, 34 bls. rags.
——, ——, Rio de Janeiro, 28 bls. cotton residue.
——, ——, Santos, 2,870 bls. cotton linters.
Richard Shipping Co., ——, Santos, 13 bls. woolen waste.
West Texas Cottonoil Co., ——, Santos, 331 bls. cotton linters.
Kauders Steuber & Co., ——, Santos, 710 bls. cotton linters.
Williamson Products Co., ——, Santos, 283 bls. cotton linters.
New England Waste Co., ——, Recife, 31 bls. cotton residue waste, 45 bls. cotton linters.
W. Intner Co., Inc., ——, Recife, 39 bls. cotton waste.
Lush Cotton Products Co., ——, Recife, 36 bls. cotton waste.
Cown & Co., ——, Recife, 65 bls. cotton waste.
Williamson Products Co., ——, Recife, 96 bls. cotton linters, 49 bls. cotton waste.
Atlas Waste Mfg. Co., ——, Havana, 42 bls. cotton sweepings.
J. Levy & Son, ——, Havana, 31 bls. rags.
Corn Exchange Bank Trust Co., ——, Callao, 6 bls. old rags.
Philadelphia National Bank, ——, Callao, 84 bls. cotton waste.
W. R. Grace & Co., ——, Callao, 218 bls. cotton linters.

OLD ROPE

——, ——, Panama City, 45 bls.

HIDE CUTTINGS

Karch Import Co., ——, Manila, 130 bags.

GLUE STOCK

Darmstadt Scott & Courtney, ——, Recife, 64 bls.

BONE GLUE

Prague Credit Bank, ——, Santos, 400 bags.
Biological Raw Products, Inc., ——, Santos, 200 bags.

SKIN GLUE

Biological Raw Products, Inc., ——, Santos, 100 bags.

CASEIN

National City Bank, ——, Buenos Aires, 500 bags (lactic).
American British Chemical Supplies, ——, Buenos Aires, 417 bags (lactic).
——, ——, Buenos Aires, 1,499 bags (lactic, ground).
National City Bank, ——, Buenos Aires, 361 bags (unground), 20,186 kilos.
National City Bank, ——, Buenos Aires, 784 bags (ground), 47,040 kilos.
American Cyanamid & Chemical Corp., ——, Buenos Aires, 834 bags (ground), 50,040 kilos.

Barber-Ellis Shares Approved

TORONTO, Ont., September 15, 1941 — Barber-Ellis of Canada, Ltd., shares have been approved for listing on the Toronto stock exchange and will be posted for trading September 15, with a ticker abbreviation of BEC.

Listing covers the outstanding 44,000 $10 par value common shares of an authorized 54,000 shares and the entire 1,200 7% $50 par value preferred, all of which are issued. Dividends have been paid on the common since incorporation of the present company in 1931 with three payments of 1% each having been made this year in April, May and August. Common stock carries one vote per share. Preferred dividends have been paid regularly. Preferred stock is cumulative, redeemable, and carries five votes per share.

The business was originally established in 1876, manufacturing envelopes, stationery and writing tablets, and deals wholesale in papers and printers' supplies.

Company estimates output for 1941 of $2,150,000 compared with $1,869,773 in 1940, $1,747,999 in 1939 and $1,641,920 in 1938.

D. G. Dunn to Assist Vice Pres. Reynolds

Donald G. Dunn, sales promotion and advertising manager of the Reynolds Metals Company, has been appointed assistant to J. Louis Reynolds, vice-president and general sales manager, it was announced today.

Mr. Dunn was with the Standard Oil Company in Chicago from 1930 to 1936. He joined the Reynolds company in July of 1938, in charge of direct mail sales promotion, becoming advertising manager early in 1939.

Mr. Dunn is a graduate of Northwestern University where he took his B.S. in Journalism in 1930, and the Harvard Graduate School of Business Administration (M.B.A.) in 1938.

Dr. C. E. Hartford Goes With Union Bag

The Union Bag and Paper Corporation announces the appointment of Dr. C. E. Hartford, as chief chemist in charge of laboratory control, development and research, at its Savannah mill.

Dr. Hartford was formerly associated with the Southern Kraft Corporation, at its Panama City mill.

New York Paper and Pulp Market Review

Paper and Paper Board Orders Continue To Reflect Heavy Demand But Backlog Orders Appear To Be Starting To Decline — Pulp Market Strong—Prices Advanced This Week On Soft Fiber Twines

Office of the PAPER TRADE JOURNAL,
Wednesday, September 17, 1941.

Increasing defense needs for many grades of paper and a heavy trade demand are reflected in reports received from many manufacturers' representatives, jobbers, and general paper merchants during the week.

The price situation in paper is viewed in the trade as well stabilized for the balance of the year with some upward revisions likely in some grades of coated papers and in publication book paper. The question of priorities is a major topic in the paper markets and in the industry today and it is also widely discussed in all industries.

The increasing quantities of raw materials and finished goods of many kinds allocated to defense needs represented by government orders, is making the situation more clear to business men that serious dislocations, curtailment of output and unemployment must inevitably follow so vast a change. Serious shortages of paper are not considered likely in the trade for this year but the longer range view is not so encouraging.

Authoritative sources indicate that actual domestic production of paper since the first quarter of 1941, has equalled or exceeded the estimated requirements of the Office of Production Management. Output for the remainder of this year is expected to at least equal orders and backlogs are now reported gradually levelling out. The grand total of domestic production of paper, all kinds, including paper board, for the first three quarters of this year aggregated 11,267,075 tons, compared with 9,330,313 tons for the same period last year. The total production for 1940 was 12,519,124 tons. Production for July, 1941, was 12.5% higher than for July, 1940.

Paper production for the week ended September 6, a holiday week, was 86.1%, compared with 69.3% for 1940, with 74.0% for 1939, with 66.0% for 1938, and with 68.7% for the corresponding week for 1937.

Paper board production for the week ended September 6 was 80.0%, compared with 60.0% for 1940, with 63.0% for 1939, with 57.0% for 1938, and with 59.0% for the corresponding week for 1937.

Chemical Pulp

A strong chemical pulp market with prices stabilized and firm, about sums up this market at this date. Woodpulp imports for June, 1941, of 105,031 tons, were the highest since early in 1940, and 10.4% above May, 1941.

Rags

The rag market is firm with an upward revision reported in two of the higher grades this week. New white No. 1 shirt cuttings are up to 7.50 to 7.75, and new unbleached up to 7.75 to 8.00. All other grades are firm and prices unchanged.

Old Rope and Bagging

The demand for old Manila rope is reported active and prices are firm. Sisal and jute strings are also firm. No important change from prevailing quotations has been reported this week.

Prices are strongly maintained on scrap gunny, with no changes reported at this date.

Old Waste Paper

The campaign to expand the collection of waste paper continues active. Current prices on the lower grades, made by voluntary agreements in the trade, are in effect. New maximum or ceiling prices announced by the Office of Production Management and Civilian Supply will go into effect October 1.

Twine

The twine market is active with higher prices in effect this week on most grades of soft and hard fiber twines. The supply situation of imported fibers continues uncertain and manufacturers of these grades of twines reserve the privilege of limiting quantities.

International Files Registration

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 17, 1941—International Paper Company has filed a registration statement under the Securities Act of 1933 with the Federal Securities and Exchange Commission covering 1,387, 748-23/40 shares of common stock at $15 par value.

All but 40,000 shares of the stock registered will be issued upon the exercise of warrants to be outstanding after the proposed acquisition of the assets of the International Paper and Power Company. The warrants are exercisable at $25 a share and will expire September 26, 1942. The 40,000 shares of common stock are subject to an option held by Calvin A. Agar, vice president and director, entitling him to purchase the stock at $15 a share. Any proceeds from the sale of the securities will be available for corporate purposes.

Paper Production Increases

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 17, 1941—Annual production of paper and paper board increased nearly 700,000 tons between 1937 and 1939 but declined in dollar value, according to a 1940 Census report issued by the Department of Commerce.

Total production in 1939 as reported to the Census was 13,509,642 tons, compared with 12,837,003 tons in 1937. Dollar value in 1939 was $848,915,555 and in 1937, $887,920,461. Four states had production in excess of 1,000,000 tons, these being New York with 1,386,857; Michigan with 1,225,977; Maine with 1,034,976, and Wisconsin with 1,010,974.

The Census Bureau also issued statistics on Pulpwood Consumption and Wood-Pulp Production showing 6,993,334 tons of pulp produced in 1939 from 10,816,466 cords of wood.

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Charleston, South Carolina

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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, September 17, 1941.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Demand reported steady for the week. The pulp is currently quoted at $35 per ton in barrels, at works; the powder is offered at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm. Market reported tight for the week. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are higher. Demand active for the week. Market tight. Standard domestic casein, 20-30 mesh, is currently quoted at 28 cents per pound; 80-100 mesh, at 28½ cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 27½ cents per pound. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are unchanged. Demand reported steady for the week. Solid caustic soda is currently quoted at $2.30 per 100 pounds, flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine have been revised. Market under full priority control. Chlorine is currently quoted at $2 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—Quotations on most grades of rosin are lower for the week. "G" gum rosin is currently quoted at $2.48 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $2.48 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.98 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm. Demand active, with current quotations nominal. Domestic salt cake is currently quoted at $14 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lot, f.o.b., shipping point. The quotation of $16 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand reported active. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and continue unchanged for the current week. Pearl is currently quoted at $3.10 per 100 pounds; powdered starch at $3.20 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported active. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.80 per 100 pounds, in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $18 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$6.00
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.50	"	5.00
Standard Wrapping	4.50	"	—
Tissues—Per Ream—Carlots			
White No. 1	1.07½	"	—
White No. 1 M. G.	.97½	"	—
White No. 1½	.85	"	—
White No. 2	.85	"	—
Anti-Tarnish M. G.	.90	"	—
Colored	1.00	"	—
Kraft	.90	"	—
Manila	.80	"	—
Unbl. Toilet, 1 M.	4.14	"	—
Bleached Toilet	5.60	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	3.80	"	—
Bleached, Jr.	2.30	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	8.75	@	10.75
No. 1 Manila Wrapping, 35 lb.	5.50	"	5.75
No. 2 Manila Wrapping, 35 lb.	5.25	"	5.50
Boards, per ton—			
News	48.00	@	—
Chip	48.00	"	—
Sgl. Mla. Ll. Chip	60.00	"	—
White Pat. Coated	75.00	"	—
Kraft Liners	60.00	"	—
Binders Boards	80.00	"	—

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items.

Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10	@ $46.00	$40.25	@ $47.25
100% Rag	31.05	" 36.50	32.20	" 37.75
85% Rag	....	" ..	29.90	" 35.00
75% Rag	23.60	" 27.75	24.75	" 29.00
65% Rag	....	"	21.65	" 26.25
50% Rag	17.55	" 21.50	18.70	" 22.75
35% Rag	14.65	" 17.75	15.80	" 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—

White, Assorted Items.

Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$9.35 @ $11.50	$11.55 @ $12.75
No. 2	8.50 " 10.25	9.65 " 11.75
No. 3	8.05 " 9.25	9.20 " 11.25
No. 4	7.70 " 9.50	8.90 " 10.75

Colors $1.00 cwt. extra.

Free Sheet Book Papers—

White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$11.90 @ $13.50
No. 2 Glossy Coated	10.35 " 11.75
No. 3 Glossy Coated	9.55 " 11.00
No. 4 Glossy Coated	9.15 " 10.50
No. 1 Antique (watermarked)	9.05 " 10.50
No. 2 Offset	8.40 " 9.75
A Grade E. F.	8.20 " 9.50
A Grade S. & S. C.	8.45 " 9.75
B Grade E. F.	7.65 " 8.75
B Grade S. & S. C.	7.90 " 9.00
C Grade E. F.	7.35 " 8.50
C Grade S. & S. C.	7.60 " 8.75
D Grade E. F.	7.10 " 8.25
D Grade S. & S. C.	7.35 " 8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—	
Moist	No prices
Dry	No prices

(Delivered)

No. 1 Domestic and Canadian	40.00	@	42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.72½	@	4.50
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	4.25
Strong Unbleached Sulphite	3.17½	"	4.25
News Grade, delivered			
Unbleached Sulphite	61.00	"	64.25

On Dock, Atlantic Ports

Kraft Bleached	4.12½	"	—
Kraft Light & Strong	No price		
Kraft No. 1	3.60	"	4.75

(F. o. b. Pulp Mill)

Kraft Domestic and Canadian	2.75	"	3.37½

(Delivered)

Soda Bleached	3.30	"	—

Add 60 cents per short ton, discharges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N Y

Shirt Cuttings—			
New White, No. 1	7.50	@	7.75
Silesias No. 1	4.25		4.5
New Unbleached	7.75	"	8.00
Blue Overall	5.00	"	5.25
Fancy	2.50	"	2.75
Washables	2.00	"	2.13
Mixed Khaki Cuttings	2.50	"	2.75
O. D. Khaki Cuttings	3.00	"	3.13

Old Rags

White, No. 1—			
Repacked	3.10	"	3.38
Miscellaneous	2.35	"	2.65
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	1.25	"	1.38
Miscellaneous	1.10	"	1.25
Roofing Rags—			
No. 1	1.30	"	1.35
No. 2	1.20	"	1.25
No. 3 (bagging)	.95	"	1.00
No. 4	.90	"	.95
No. 5A	.90	"	.95

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

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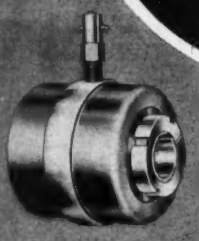
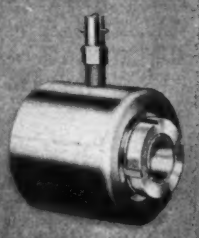


SPHERICAL BEARING



CYLINDRICAL BEARING

HANGER BEARING
Shaft sizes 1 7/16" to 3 1/16"

JONES roller bearing pillow blocks and bearing units are built to solve those tough drive problems where stamina and the ability to "take it" are mighty important.

One look at these bearings will convince you that they belong to the Jones drive family. They have that sturdy look and years of maintenance records have proved how they stand up to the job.

These bearing units are practical . . . double row Timken roller bearings are locked firmly to the shaft by means of a tapered split steel adaptor and clamp nut . . . an effective seal retains lubricant and prevents the admission of dust and foreign matter . . . they are easily removed from the shaft.

The Jones organization will be pleased to give you complete details showing range of sizes built, dimensions, construction specifications and prices. Just ask for Bulletin No. 56.

W. A. JONES FOUNDRY & MACHINE CO.
4443 Roosevelt Road, Chicago, Ill.

Since 1890
Jones
HERRINGBONE — WORM — SPUR — GEAR SPEED REDUCERS
CUT AND MOLDED TOOTH GEARS — V-BELT SHEAVES
ANTI-FRICTION PILLOW BLOCKS — PULLEYS
FRICTION CLUTCHES AND TRANSMISSION APPLIANCES

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens.	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Bunny No. 1—			
Foreign	Nominal		
Domestic	4.50	@	4.75
Wool Tares, light....	2.50	"	2.75
Wool Tares, heavy..	2.50	"	2.75
Bright Bagging.....	4.25	"	4.50
Manila Rope—			
Foreign	6.00	"	6.25
Domestic	6.00	"	6.25
Jute Threads.....	4.00	"	4.25
Sisal Strings.....	2.75	"	3.00
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.75	@	4.00
Ordinary Hard White No. 1....	3.25	"	3.50
Soft White No. 1..	2.50	"	2.75
Sott White Extra..	2.70	"	2.85
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag....	1.25	"	1.40
Solid Flat Book....	1.15	"	1.30
Crumbled No. 1....	.70	"	.75
Ledger White Stock.	2.30	"	2.45
Ledger Stock Colored	1.75	"	1.90
Manila—			
New Env. Cut....	3.25	"	3.50
New Cuttings.....	3.00	"	3.25
Old Kraft Machine Compressed bales..	2.00	"	2.10
News—			
No. 1 White News	1.50	"	1.60
Strictly Overissue.	.75	"	.80
Strictly Folded....	.65	"	.75
Corrugated	.82½	"	.90
No. 1 Mixed Paper..	.57½	"	.65

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp.....	.21	"	—
Fine Polished—			
Fine India.....	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers.....	.17	"	—
Tube Rope.....	.18	"	—
Wall Paper.....	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope...	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java.....	.18	"	—
Mex. Sisal.....	.16	"	—
Manila	nominal		
Jute Carpet Threads.	3.00	"	3.25
Bleachery Burlap....	7.50	"	8.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	4.25	"	—
Scrap Sisal.....	3.25	"	3.50
Scrap Sisal for Shredding	3.25	"	3.50
Wool Tares—			
Foreign	(nominal)		
Domestic	4.00	"	4.25
Aust. Wool Pouches.	4.75	"	5.00
New Burlap Cuttings	5.50	"	5.75
Heavy baling bagging	4.25	"	4.50
Paper Mill Bagging..	3.50	"	3.75
No. 2 Bagging.....	.50	"	.60

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	—	@	.03
Fancy Percales....	.03½	"	.04
New White No. 1.	.07¼	"	.07¾
New Light Flannelettes	.05¼	"	.05¾
Canton Flannel, Bleached	.07¼	"	.07½
Underwear Cutters, Bleached	7.25	"	7.50
Silesias No. 1.....	.04¼	"	.04½
New Black Silesias..	.04½	"	.04½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached....	.07	"	.07¼
Blue Cheviots.....	.04½	"	.04¾
Fancy	.01¾	"	.02
Washable	.01¾	"	—
Cottons—According to Grades—			
Blue Overalls.....	.04¼	"	.04½
New Black, Soft..	.03	"	.03¼
Khaki Cuttings.....	.02¼	"	.02½
O. D. Khaki.....	.02½	"	.03¼
Corduroy	.02	"	.02¼
New Canvas.....	.05¾	"	—
B. V. D. Cuttings...	.06¼	"	.07

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	"	2.25
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues.....	1.75	"	2.00
Old Blue Overalls....	1.60	"	2.00
Thirds and Blues....	1.50	"	—
Miscellaneous	1.25	"	1.35
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.20	"	1.25
No. 2.....	.95	"	1.00
No. 3.....	.85	"	.95

Foreign Rags

(F. o. b. Boston)

Canvas .....(nominal)	
Dark Cottons.....(nominal)	
Dutch Blues.....(nominal)	
New Checks and Blues(nominal)	
Old Fustians.....(nominal)	
Old Linsey Garments.(nominal)	
New Silesias.....(nominal)	

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White No. 1.	.07	@	.07½
New White No. 2.	.04	"	.04½
Light Silesias.....	.04½	"	.04¾
Silesias, No. 1.....	.04	"	.04¼
Black Silesias, soft	—	"	.03
New Unbleached..	.06¾	"	.07
Washable Prints..	.03	"	.03¼
Washable No. 1..	—	"	.01¾
Blue Overall.....	.04	"	.04¼
Cottons—According to grades—			
Washable shredding	—	"	.01¾
Fancy Percales....	.03	"	.03¼
New Black Soft...	.02½	"	.02¾
New Light Seconds	—	"	.04
New Dark Seconds	—	"	1.50
Khaki Cuttings—			
No. 1 O. D.....	.03	"	.03¼
No. 2 Mixed.....	.02	"	.02¼
Corduroy	.01¾	"	.01½
New Canvas.....	.04½	"	.05
New Black Mixed.	—	"	.03¼

Domestic Rags (Old)

White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	"	3.00
Thirds and Blues—			
Miscellaneous	1.50	"	1.75
Repacked	1.80	"	1.90
Black Stockings (Export)	Nominal		
Roofing Stock—			
Foreign No. 1....	Nominal		
Domestic No. 1...	—	"	5.00
Domestic No. 2...	1.45	"	1.50
Roofing Bagging..	1.30	"	1.40

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	3.50	@	4.25
Domestic	3.50	"	3.75
Manila Rope.....	—	"	5.50
Sisal Rope.....	3.50	"	—
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	3.25	"	3.50
No. 2.....	—	"	1.50
Wool Tares, heavy...	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.25	"	3.50

Old Papers

(F. o. b. Phila.)

Shavings—			
Hard White Special	3.50	@	3.75
Hard White.....	3.15	"	3.25
No. 1 Soft White..	2.50	"	2.60
No. 2 White.....	1.85	"	1.90
No. 1 Mixed.....	1.20	"	1.25
Solid Ledger Stock..	2.30	"	2.40
Ledger Stock, white.	2.25	"	2.30
Ledger Stock, colored	2.00	"	2.10
No. 1 Books, heavy..	1.35	"	1.40
Manila Cuttings.....	2.25	"	2.30
Print Manila	.75	"	.80
Container Manila....	.65	"	.70
Kraft Paper.....	2.00	"	2.10
No. 1 Mixed Paper..	.57½	"	—
Straw Board Chip...	.50	"	—
Binders Board Chip..	.50	"	—
Corrugated Board...	.90	"	1.00
Overissue News.....	.85	"	.90
Old Newspapers.....	.65	"	—

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White.	3.75	@	4.00
No. 1 Soft White.	2.75	"	3.00
No. 2 Mixed	.90	"	1.00
Solid Ledger Books.	2.25	"	2.50
Overissue Ledger Stock	1.75	"	2.00
White Ledger Stocks	1.50	"	1.65
Mixed Ledgers	1.25	"	—
No. 1 Heavy Books..	1.20	"	1.30
No. 1 Books, Light..	.75	"	.85
Crumpled Stitchless Book Stock	1.25	"	1.35
Manila Env. Cuttings	3.00	"	3.25
Manila Envelope Cuttings, extra quality	3.00	"	3.25
White Blank News..	1.70	"	1.80
No. 1 Kraft.....	2.25	"	2.40
Extra No. 1 Kraft...	2.40	"	2.65
Mixed Papers.....	.65	"	—
Print Manila	.75	"	—
Container Manila....	.65	"	.75
Old Newspapers.....	.70	"	.72½
Paper Wool Strings.	1.30	"	1.35
Overissue News.....	.65	"	.70
Box Board Chips....	.35	"	—
Corrugated boxes....	.90	"	1.00
Kraft corrugated boxes	1.60	"	1.75
New Kraft Corrugated Cuttings....	2.00	"	2.25
Screening Wrappers.	.85	"	.90

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	4.50	@	4.60
Sisal Rope	3.50	"	—
Mixed Rope.....	1.00	"	1.25
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Soft Jute Rope.....	4.75	"	5.00
Manila Rope—			
Foreign .....(nominal)			
Domestic	6.00	"	6.25

President's Party To Open Meeting

Reports received from the convention committee in San Francisco and released from the executive headquarters of the National Association of Waste Material Dealers, Inc., in New York are to the effect that the President's Party, which will be one of the highlights so far as entertainment features of the convention are concerned, will be one of the most attractive and in some ways most sensational affair of this kind ever put on by a convention committee.

Through the generosity of many members of the industry there will be distributed at the party individual prizes of real value, donated as a rule by concerns within the membership of the association.

While the bulk of the delegates attending the convention will reach San Francisco on Friday, October 10, the convention itself will not get underway until Saturday, the 11, which entire day will be given over to registration and entertainment.

The trip to the Muir Woods, Saturday forenoon for luncheon under the big trees, will be followed in the evening by the president's party which now promises to set a record that future convention committees will find it hard to beat.

The past week has witnessed another big jump in reservations, both hotel and train, and everything now points to an astoundingly large attendance from the East while the Pacific Coast states can be counted upon for practically a 100% representation at the convention. Not only is the attendance going to be very large but it is going to be in every way representative of all branches of the Waste Material Industry.

Boiler Water Control

A twenty-page booklet illustrating and describing water testing equipment, procedure for making water tests, conductivity apparatus, proportioning pumps, chemical feeders, etc., has recently been issued by the Bird-Archer Co. of 90 West street, New York. Copies mailed free of charge upon receipt of name, address and business affiliation.